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# AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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## EDITORIAL



## THE RADIO AMATEUR

When the art of Radio was in its infancy, most of the experimental work was carried out by those who were interested from the purely technical and scientific viewpoint without thought of pecuniary reward. In other words, they had the essential Amateur qualifications. As the art became developed for commercial use, regulations became necessary but, except in times of extreme national emergency, there was always a place for the Radio Amateur as we know him.

The Amateur station licences that we hold today have their justifications in our attempts to improve communication and in the facilities that they offer to us in the field of research. To regard an Amateur station as the equivalent of a telephone without wires would be to deny the Amateur Radio tradition and to remove the reasons for the existence of our sometimes hard-won facilities. It should be our constant endeavour to use our licences for the true purposes for which they are issued.

In the use of our Amateur stations for communication purposes, particularly in DX work, we have at hand facilities that are not always available to commercial research workers. Amateur Radio is an international movement in which we can find fellow-workers in many overseas countries and can conduct experiments in communication on a global scale. Bearing in mind also that Amateur Radio is a hobby, we are forced to consider seriously the cost of our equipment. The result of this is that we have to seek efficiency with economy and achieve our results from low-powered equipment of a type that lends itself readily to emergency use. The value of this form of research and training has been demonstrated clearly in our own country in recent years. The growing number of operators in our communication bands has also encouraged research into the more effective use of our Radio spectrum by such means as s.s.b. and highly selective receivers.

Although purely technical research is not confined to the v.h.f. bands, much of it takes place there. The impetus given to work in these bands by Radar and Television and the relative freedom from interference of various kinds provide conditions in which work of a standard approaching more nearly that of the laboratory may be carried out. The short wavelengths encourage antenna experiments that would be impracticable in the medium-frequency bands and enable the construction of working models for subsequent application to lower frequencies. The granting of the Limited Licence by the Authorities is evidence of official recognition of the possibilities of the v.h.f. bands as a research medium.

Communication in the v.h.f. bands, apart from pure research, presents many problems and opportunities. The equipment used may be built in such compact form that it is particularly adaptable to portable and mobile operation. Encouragement for this type of operation is apparent in the activities of the various groups of enthusiasts within the ranks of the Institute. The recent approval for the issue of Television permits will also enable research in Television by propagation instead of by the closed circuit methods previously required.

It is hardly to be expected that every Radio Amateur would engage in all of the activities we have mentioned. A more reasonable expectation is that we, as Radio Amateurs, should be conscious of our tradition and should strive to expand our knowledge. By our deeds and by our words, we must show that we are engaged in a scientific recreation that has a bearing on the welfare of the community. In communication, particularly, we have to remember that we can be heard by listeners on the bands—official or otherwise. Amateur Radio is in our hands and it is up to us to see that it holds its rightful place.

FEDERAL EXECUTIVE.

# A Rotary Beam for 20-15-10-5-2 Metres

BY D. C. HABERECHT, \* VK2RS

THESE is no doubt that many of us have from time to time surveyed those multi-band rotary beams one sees from place to place, wondering just what could be done in our own particular conditional circumstances, without perhaps digging too deeply into the family budget. Here is a suggestion which you may find well worthy of consideration.

The writer has for some time been faced with the problem of constructing a rotary system for these bands, namely 20, 15, 10, 5 and 2 metres. Having a 35 foot oregon tower graced only with a 16 element 2 metre beam, it was decided during the lull in v.h.f. over the winter months to see what could be done. It was considered that separate beams for each band would be somewhat formidable particularly as a 24 element 2 metre beam was considered a near minimum requirement in our particular QTH, to erect this above an already top heavy construction was considered suicide.

Bearing these in mind, it was decided that a rotary single section WBJK type beam was about the best suggestion, however its performance on 15 metres was somewhat in doubt. According to available information its performance on 20 and 10 metres was quite good, being the near equivalent of a good 2 element on 20 and better than a 3 element on 10 metres (since on this band, it becomes virtually a 4 element job).

The question now arose, how would it perform on 15 metres? A chance QSO with a well known VK9 Amateur gave us all the incentive necessary, a short burst from the pages of his log were more than enough to prove in the very least that it possessed both gain and directivity on this band.

And as a well known comedian would say, "Let's give it a go." The results were far greater than our expectations on the three bands. European stations have been worked on all three bands over the past month on phone with reports of S9 and over on 15 metres. However, on 10 metres the reports have not been as good to Europe although we have had many QSOs at R5. No doubt the rather patchy conditions have had quite a lot to do with this, and in view of the repeated comments that "you are the first VK station we have worked since 1947 OM" has given us a great deal of faith in its performance on this band. Many QSOs have been made with Ws with some really excellent reports on all three bands.

## CONSTRUCTION REQUIREMENTS

**Boom:** Kiln dried oregon, 14 feet long, either 4" by 2" or 4" by 4", depending on whether the 2 metre section is required or not.

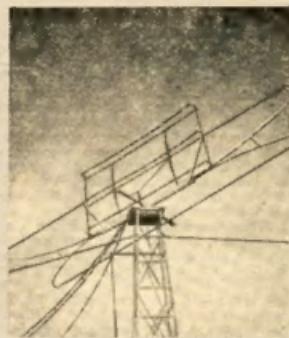
**Bamboo Supports:** Four lengths of selected bamboo rod, obtainable from most sports stores. These are approximately 15 feet in length. Clamp these to the ends of the boom (see diagram).

**Vertical Brace:** Two lengths of 2" x 1" oregon 9 feet long, if the two metre

section required, and 4 feet approximately otherwise. Screw these to either ends of the boom in the vertical plane and brace to the boom toward the centre with 2" x 1" timbers; two pieces required for each vertical brace, as per diagram.

**Centre Cross-Piece:** To the centre of the boom screw two pieces of 2" x 1" timbers 8 feet 10 inches long; space these approximately 1 foot apart, half way along each side, and at each end fit 10" pieces of the same timber to form a ladder construction. This cross-piece apart from supporting the elements, forms the boom of the 5 metre beam.

**Spreaders for Bamboo Supports:** Construct from 2" x 1" timber two 2 feet 6 inch lengths, from the ends cut a



wedge shape piece to enable a tight fit between the bamboo supports with the wire elements of the beam attached. Before binding these in position, form the beam by attaching the four elements each 16 feet 6 inches long and bend the bamboo until the required spacing of 8 feet 8 inches between elements is reached. You will probably find that there will be an excess length of bamboo. After making sure that the spacing between elements is correct with the spreaders moved firmly in place, remove the excess lengths of bamboo.

**Wire Supports:** From the ends of the elements to the vertical brace, approximately 3 feet 6 inches up from the boom, attach wire supports just sufficiently tight enough to prevent any sag in the bamboo supports when lifted from the ground. These could be broken with insulators if required.

**Cross-Over Section:** These are made up of the same materials as the elements and are made each 9 feet long crossing over at the centre of the boom. The feedline is attached approximately 1 inch from the centre. It is best to use an open wire line attached to a parallel tuned aerial coupler if the length of feedline does not exceed 60 feet, however for ease for rotation tuned 300 ohm ribbon can be successfully used

if the length of feed is not too long, however here the velocity factor of ribbon must be considered—approximately 45 feet of ribbon is the equivalent of a 66 foot length of open wire feed and providing the overall length does not exceed the 45 feet mark, the losses encountered will not be serious.

It is essential to use a coupler if multi-band operation is required, a single parallel tuned circuit will suffice, approximately 5 turns of heavy gauge wire 2" in diameter, tuned by a 100 pF. double-spaced condenser.

A word of warning! Use good quality wire throughout, most particularly in the feedline. Single strand plastic insulated wire is not satisfactory, the currents in this type of antennas are very high and unless good materials are used losses due to heating will occur.

An interesting comparison between the two types of feed lines, i.e. open wire and 300 ohm ribbon, was made. It was found that on "receive" the width of the beam appeared to be about 40 degrees before a noticeable drop in signal strength occurred. This, according to available information, was near correct. However, when the ribbon feed was attached, on "receive" the beam appeared to be quite noticeably sharper, approximately 30 degrees wide, with a drop of from 5 to 7 S points on the ends. A much better drop than with the open wire line. This is probably due to the lower signal pick-up in the lower impedance line, however there appeared to be no noticeable difference between the two types when transmitting.

## 24 ELEMENT 2 METRE BEAM

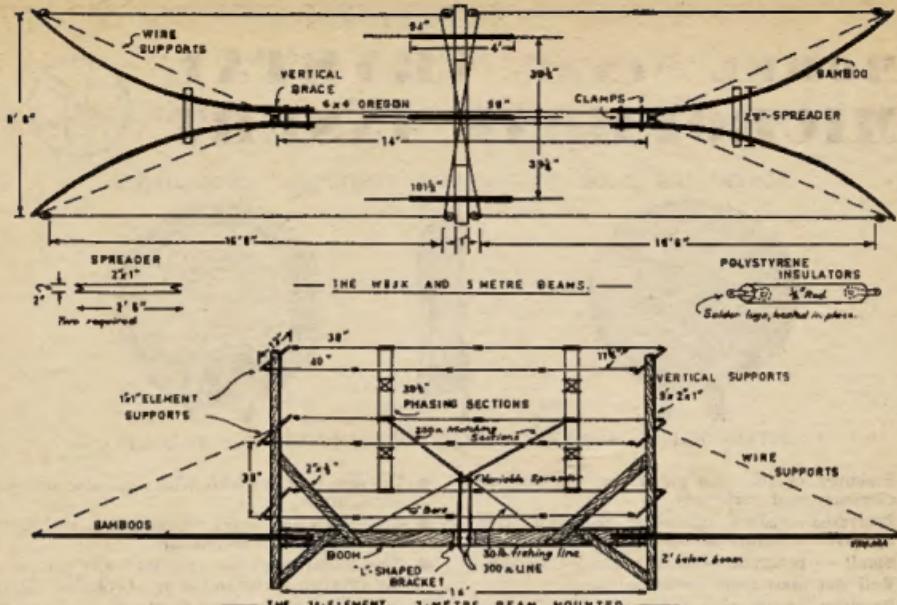
This consists of 12 driven elements backed by 12 reflectors, arranged as two separate 12 element beams mounted side by side and fed in phase. This type of beam is known as a phased or co-linear type. The elements themselves are made from expanded copper wire, having at least three strands of 22 gauge wire.

## CONSTRUCTION

**Element Supports:** These are made from 1" x 1" timber 13" long, six being required, at a distance of 5" from the centre and at ends of the supports drill a hole. Screw these supports to the vertical braces, three to each brace at a distance of 39" apart, commencing from the top of the brace. This will now complete the framework on which the beam is mounted.

**Insulators:** Between each element and at the ends are attached small insulators made from polystyrene rod of approximately 1" diameter. There are 15 lengths 1" long and a similar number 2" long required. At each end, with the aid of the soldering iron, heat into the rod a good quality solder lug so that approximately 1" protrudes. After the 30th insulator you will have become quite professional!

**Elements:** Cut 12 lengths 38" long for the radiators and attach these to the 2"



polystyrene insulators, trimming the length so that over-all, solder lug included, you have 38". Do likewise for the reflectors, however these are made 40" long and attached to the smaller insulators.

**Mounting the Elements:** Commence from the top of the vertical brace, attach the first four reflectors, drawing the wire reasonably tight, then attach the first four radiators. Move to the centre bay and repeat. However, do not attach this permanently as when the last bay is fitted in place, there may be some tightening necessary in the centre section.

Care must be taken to see that the radiators are as near symmetrically behind the reflectors as is possible. Some trimming of the reflector elements may be necessary to ensure this.

**Phasing Sections:** These are made from the same material as the elements and are each 39 1/2" long, crossing over between the lower and centre, and centre and upper bays, inserted at each cross-over is a four terminal polystyrene block.

**Matching Sections:** Cut two lengths of 300 ohm ribbon 51" long, which is an electrical wavelength (wavelength times velocity factor, i.e.  $76 \times 0.67 = 51"$ ). Attach these to the centre bay of each phasing section, leaving the other ends unattached for the present. Incidentally, open wire line of 300 ohms impedance could be used here, however there would be a considerable length of wire left floating when attached to the "Q" bars.

**"Q" Bars:** Obtain two lengths of 1" outside diameter copper tubing, cut to 20". Make up an "L" shaped metal

bracket from a piece of flat metal measuring 2" x 4", drill two holes for mounting to boom and two other holes spaced 1 1/2" apart on the opposite side to the mounting holes; bend the bracket. Through the two holes opposite the mounting holes, attach two stand-off insulators and mount your "Q" bars, preferably with bolts, fasten the ends of the rods and drill suitable holes. Mount the "Q" bars to the boom so that they stand up on top of the boom in the near vertical plane, just sufficiently angled so that they will not foul the elements of the beam.

A few inches from the top of the bars attach a suitable variable spreader. This can be made from two pieces of bakelite or fibre approximately 4" long and 1" wide. Drill holes near each end and one in the centre and mount (see diagram). Use lengths of 30 lb. nylon fishing line to assist in holding the bars firm.

Connect the floating ends of the matching sections to the top of your "Q" bars, making sure that there are no twists in the ribbon. The left hand side of one 12 element beam and the left hand side of the other are joined together and attached to one side of the "Q" bars, and the right hand side of each beam is connected to the other "Q" bar. This ensures correct phasing. Connect your feedline, 300 ohm ribbon, to the base of the "Q" bars.

**Matching:** This can be done by means of a "Twin Lamp Standing Wave Indicator." Although this is not the only method by any means, it is, however, one of the simplest. With the beam raised a few feet from the ground and, of course, with your transmitter switch-

ed on, adjust the spacing between the "Q" bars so that the lamp nearest the reflector 10 1/2", and a director 9 1/2". The elements are spaced 0.2 of a wavelength apart or 39 1/2".

All elements in use here were cut from conduit and mounted to the cross-piece by means of individual element supports made from 1 1/2" square timbers, 4 feet long. The elements themselves are attached to the supports by means of stand-off insulators. The method of feed employed is a Delta Match with 50 ohm ribbon, fanned out either side of the centre of the driven element.

#### SUMMARY

There is little else to say with possibly one very important consideration previously overlooked. Before mounting the beams, give all woodwork a very generous application of paint; once up on the tower or pole, it's there to hear, storms permitting.

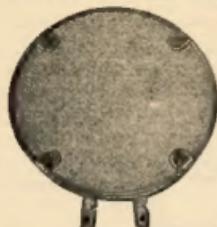
The cost of the complete set-up in the writer's case, including the oregon lattice type tower did not exceed £25, a comparatively cheap all-band beam set-up.

The writer would be very pleased to hear from anyone who may decide to undertake this venture either in part or in the full.

# MODEL "1XA" CRYSTAL MICROPHONE INSERT



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FITTED WITH PLATED REAR SHIELD TO ELIMINATE HUM PICK-UP

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- Australian made throughout.
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## TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyrfil" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

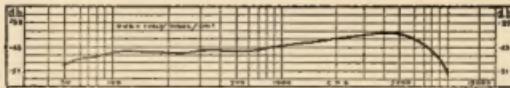
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1 1/4" diameter (rear), 1/8" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.  
Output Level = -45 db (0 db = 1 volt/dyne/cm<sup>2</sup>)  
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

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# Australia and the International Geophysical Year

By PROFESSOR H. C. WEBSTER, Convener, Australian National Committee for the I.G.Y.

THE period, July 1957 to December 1958, will have a special significance for physicists, for during this period a concerted effort, spread over a large proportion of the earth, is to be made to understand the various physical phenomena which occur naturally in and on the earth. Among the phenomena, the following have been singled out for special study:

1. The movements of air and water in the atmosphere, especially in the stratosphere and above (say, 30,000 ft. upwards), their part in the general circulation, and broadly the study of what we may call the overall weather. A weather phenomenon of special interest is the thunderstorm, for it has an indirect bearing on other geophysical phenomena; another is the "jet stream" of such importance in high level aviation; a third is the "ozone" layer at about 80,000 ft.

2. The changes in the earth's magnetism which occur, some regularly, some in magnetic storms. Of special importance are the changes near the equator (magnetic) and the regions where aurora are frequently seen overhead (the auroral zones). Here "electrojets" (intense currents) occur in the higher parts of the atmosphere.

3. The brilliant optical phenomena, seen especially in the Arctic and Antarctic, known as "aurora polaris." Apart from observations by eye and by photography, these aurora can be observed by radio; we shall return to this aspect later.

4. The various changes which occur in the ionosphere, the strongly-conducting layer extending from about 200,000 ft. upwards. Members of the W.I.A. are familiar with its vital influence on radio communication (except at u.h.f.). The connection between ionospheric changes, magnetic changes, aurora, and phenomena on the sun is perhaps not so well known.

5. The changes in the activity of the sun, solar flares and ejections, sunspots, etc., any, in fact, which influence geophysical phenomena. During the period 1st July, 1957, to 31st December, 1958, the number of sunspots is expected to be very high; the peak of the sunspot cycle is predicted to occur during that period.

6. Cosmic rays: These rays, of so far undetermined origin, enter the earth's atmosphere from outside and produce various secondary phenomena, which extend to sea level and below. They have different properties at different latitudes and show small variations which may throw light on their origin.

7. The behaviour of glaciers, especially those in inaccessible regions such as Antarctica.

8. Ocean currents, ocean wave systems, changes in salinity, etc.

9. Earthquake and the transmission through the earth of earthquake shocks. This throws light on the constitution of the interior of the earth; whether it is solid or liquid, hot or cold.

10. The precise shape of the earth; accurate surveying and accurate gravity measurements. These things do not change (at least not at a measurable rate), but the International Geophysical Year provides a good opportunity for improving our knowledge of them.

Although the promoters of the International Geophysical Year would naturally have wished these phenomena investigated intensively for the whole period and at points closely distributed over the whole earth, it was fully realised that this would be impossible of achievement. A less ambitious programme calling for a limited deployment of stations was therefore formulated and this programme has been accepted by the forty nations which are participating in the International Geophysical Year programme. Although the areas set down for special study vary with the phenomenon to be studied, it is broadly true that special interest attaches to the polar regions, and to strips of the earth's surface 20° wide in longitude straddling certain selected meridians, including 0°, 140°E, 75°W. For meteorological purposes other strips, including 105°E, are included.

Again, although a limited programme of observations should be carried out every day, there are certain selected days, and certain selected periods, when more frequent observations should be made; moreover, there are certain experiments which will be carried out only on these selected days. These days have been termed World-Days. Some have already been selected (Regular World-Days). The rest will be selected only a few hours in advance (Special World Intervals). Such alerts will be given when interesting disturbances appear on the sun.

While most of the observations for the International Geophysical Year will be made on the ground, the programme includes a number of measurements which will require balloons carrying instruments to be sent up to over 30,000 ft. Moreover, it is proposed to send instruments up in rockets to even greater altitudes (perhaps 600,000 ft.). It will probably not be possible to send up many rockets, as they are exceedingly costly; they may be sent up only on "World Days".

Of especial interest is the plan to launch "space satellites" which will orbit round the earth some 300 miles up and will carry instruments to permit their being followed (by radio) and send down measurements. The satellite programme is the exclusive prerogative of the United States and is expected to cost \$12,000,000. Indeed the United States programme for the International Geophysical Year is the most ambitious of all and may cost altogether \$28,000,000.

Although it is only major powers like the United States and the U.S.S.R. which can mount programmes of this order of magnitude, nearly forty other nations are taking part in the effort, to the extent permitted by their scientific and financial potential.

Australia is in a position to play a vital role in the International Geophysical Year, for its territories stretch from the Equator to the South Pole and include the 140°E. zone which is singled out for special study, as well as the Antarctic zone which is of special interest in all fields of study and the equatorial zone which is of special interest in Ionospheric and Geomagnetic recordings. Fortunately, its existing observations will enable it to carry out a fairly extensive programme of observations in the fields of Meteorology, Geomagnetism, Aurora (at Macquarie Island and Mawson), Ionosphere, Cosmic rays (Hobart and Macquarie Island) and Seismology, but an earnest effort is being made to install additional observatories in all these fields and to increase the frequency of observations. We also hoped to carry out Glaciological, Oceanographical and other observations not previously attempted. It is now certain that some of the new activities planned will be effected but others still remain doubtful. Of particular interest are the extensions in the polar stations of Macquarie Island, Mawson and Vestfold Hills (the latter two on the Antarctic continent).

Members of the Wireless Institute of Australia will no doubt be especially interested in the work on the Ionosphere. The existing ionospheric observatories (Townsville, Brisbane, Watheroo, Canberra, Hobart, Macquarie Island and Mawson) will be maintained and a new observatory will, it is hoped, be opened at Moresby. In addition, it is hoped to install a number of observing points for special ionospheric phenomena, such as winds and drifts, absorption and the propagation of whistling atmospherics. The Special World Days referred to earlier will be days on which ionospheric disturbances are expected and more frequent ionospheric observations will therefore be made.

The aspect of the programme upon which the National Committee will seek the co-operation of Wireless Institute members is in connection with the aurora. It has been found in North America that during auroral displays, long distance communication is frequently established at unexpectedly high frequencies—especially in the 50-80 Mc. band. It has been found that in these cases the path between the stations usually passed through or near a region where the aurora reach the zenith and they are therefore ascribed to reflection from the auroral streams. It is anticipated that during 1957-8 the auroral displays will be particularly good and may reach to comparatively low latitudes. It will therefore be of great interest to the Committee to know of any long distance radio contact in the 50-70 Mc. band, especially if the path passed south of 60° latitude. Such contacts are perhaps more likely to occur for stations located in the southern States, but any report would be of interest. Nor is the interest confined to

(Continued on Page 5)

\* Substance of talk delivered to the Wireless Institute of Australia, Queensland Division.

# PHONE AND C.W. MONITOR

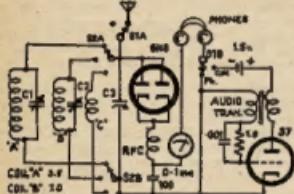
BY C. W. MANN,\* VK5DF

WITH the request for articles for our magazine, I will endeavour to illustrate my useful transmitter monitoring instrument. I call it a wave meter, cum phone-c.w. monitor, cum overmodulation indication. The bits and pieces are fitted in a box 6" wide by 12" high, by 4½" deep, but with a little more care, guess that a much smaller box would do.

There are two compartments in the box, one holds the tuned circuits, and the other the valves, audio transformer, etc. Power for the valve heaters is obtained from the frequency meter power supply.

Coil "A" is about 45 turns close-wound on a one inch former, and it has a 3-30 pF. trimmer across it.

Coil "B" has 14 turns double-spaced wound on a ½" former, also a small trimmer across it. These trimmers enable the operator to get full band-spread on the tuning condenser.



Coil "C" has also 14 turns double-spaced and wound on a ½" former, but there is no trimmer needed.

All the winding wire is about 22 s.w.g. The serial is a piece of wire about 3 ft. long, the end of it going to within about 12 inches of the transmitter aerial tuning system.

The phones are high impedance, the audio transformer is of the once used type in "ancient" broadcast receivers and is 4-1 ratio. The 1.5v. dry cell is a miniature torch battery and has already lasted five years. The dry cell is fitted there for what I believe is "contact potential"; briefly it is to neutralise the small voltage generated from cathode to plate of the triode valve when the cathode is hot.

The valves used are shown on the drawing, but I suggest that any valves may be used so long as they are connected as such—the first as a diode and the second as a triode. The switches are a selector for the appropriate coil, and a two-way one to change from phone to c.w. monitoring.

In operating the monitor on phone the meter should read about three-quarters (or a little more) of a milliamp., and for c.w. monitoring the meter only just shows a reading and that's all.

\* Wavell Street, Port Lincoln, S.A.

† Optional—depending on position of instrument and extent of shielding of transmitter.

As can be seen from the drawing, the aerial is switched off for c.w.† as otherwise there is too much power for the audio oscillator, and it will pick up enough signal from the transmitter oscillator on the key-up position to operate the monitor.

The grid leak and condenser of the triode valve may be altered in value to suit the particular tone required.

Briefly, when monitoring c.w. the diode valve rectifies enough r.f. to provide high tension current to drive the audio oscillator and give a very nice tone in the phones on the key-down position. A little "juggling" of the circuit may be necessary to have a sharp make and break of the monitor tone for transmitter key-down and up position. I have found the c.w. monitor a great help in c.w. operating, it helps a lot to keep spacing correct and a steady "hand."

On phone monitoring, overmodulation is indicated by a fluctuation of the milliamp. meter, or putting it another way, the meter shows carrier break by swinging a few degrees on modulation; the amount of movement allowable is soon determined by a little experiment.

I trust that the above will be of sufficient information for someone to find the time to build and I am sure when that is done they, like me, will find it ever so useful.

## AUSTRALIA AND THE INTERNATIONAL GEOGRAPHICAL YEAR

(Continued from Page 5)

the period after July 1957. More details about this plan for radio-location of auroras will be published later.

Another part of the International Geophysical Year plans which still has to be worked out is the distribution of Alerts, announcing the approach of a Special World Interval. The initial decision will be taken by the United States National Bureau of Standards; the decision will be broadcast by radio; it will then be the responsibility of the National organisation to see that all observers are immediately informed.

The International Geophysical Year provides a great opportunity for Australia to establish its position in the scientific world. Above all, it provides all countries with an opportunity for breaking-down of barriers of jealousy and suspicion and for showing that there is, after all, just one world.

## CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

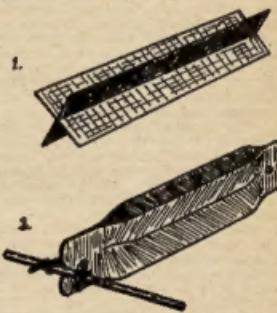
## HINTS AND KINKS

### LIGHT WEIGHT FEEDER SPREADERS

Spreaders for open-wire transmission lines should be as light as possible, but sufficiently rigid and with good electrical qualities. Commercially made spreaders of Polystyrene can be bought, but are expensive. A simple and satisfactory substitute can be obtained, however, at no cost at all, from many hospital casualty and orthopaedic departments.

Plaster of Paris bandages of a certain proprietary make are supplied rolled on lengths of X-section plastic extrusion; these are discarded when the bandages are used, and arrangements can usually be made for them to be saved and put aside.

The material is a thermo-plastic and is slightly flexible, but sufficiently rigid for use as spreaders. It appears to have good electrical characteristics. The standard lengths, according to the width of the bandages, are 3, 4, 6 and 8 inches; the 4 and 6 inch lengths are most readily available (Fig. 1).



When collected, the sections are usually covered with a film of dried plaster, but this can be broken away without difficulty owing to the flexibility of the material. If any plaster remains, it can be removed by soaking in water and scrubbing with a stiff brush. If a non-standard length is required, it can be cut with metal shears or stout scissors.

To form the ends, dip the distal half-inch in very hot water to soften the plastic, then squeeze it in a cold pair of pliers or a vice for a few minutes to flatten the end. When the material cools it will retain the shape given it while hot.

To fix the spreader between the conductors of the line, a small hole is drilled within a quarter of an inch of the end, using a hot needle or fine twist-drill; a short length of copper wire is then passed through the hole and twisted round the conductor on either side (Fig. 2).

—S. J. Lloyd, VK3AST.



# 1955 VK-ZL DX CONTEST RESULTS

## AUSTRALIA

C.W.—	Total	40	20	15	10
VK2GW	3326	773	1745	808	—
VK2AHH	1800	156	1268	375	—
VK2QL	1338	352	730	241	—
VK2XZ	993	993	—	—	—
VK2PX	713	—	713	—	—
VK2HZ	677	647	30	—	—
VK2JY	585	—	498	87	—
VK3PG	2696	30	1767	763	116
VK3IW	1335	73	1172	90	—
VK3XB	1073	743	330	—	—
VK3CK	1072	—	1072	—	—
VK3HL	1005	—	1005	—	—
VK3JA	958	—	727	231	—
VK3VF	951	—	951	—	—
VK3AHM	648	—	648	—	—
VK3ZA	572	572	—	—	—
VK3PL	504	—	504	—	—
VK3AHH†	117	—	—	—	—
VK4SE	1100	—	723	377	—
VK5RX	1198	—	1198	—	—
VK5WO	677	—	633	44	—
VK5JT	500	—	500	—	—
VK6RU	2457	416	1242	764	15
VK7UW	1450	333	1117	—	—
VK7KM	413	413	—	—	—
VK9DB	1769	114	488	1167	—

\* Includes 50 mx. score.

† 50 mx. only.

## PHONE—

Call	Total	40	20	15	10
VK2AHH	886	45	709	132	—
VK2GW	479	15	375	89	—
VK2AKV	444	—	349	80	15
VK4SP	1823	60	1215	618	30
VK5MS	1489	—	1489	—	—
VK5WO	314	—	314	—	—
VK6RU	583	—	305	278	—
VK9DB	1398	—	461	922	15

## LISTENERS—

VK2—N. L. Dash	1142
VK3—G. R. Morris, WIA-L3017	750
VK2—W. Davey	588
VK3—M. Ide, WIA-L3015	551
VK7—R. de Balfour	158
VK8—F. H. Price, WIA-L4222	110

## NEW ZEALAND

C.W.—	Total	40	20	15	10
ZL1AH	4285	537	2298	1206	244
ZL1MQ	2583	260	1668	404	251
ZL1GX	725	—	621	89	15
ZL1PN	713	713	—	—	—
ZL1MT	423	—	378	30	—
ZL2GS	2635	—	1828	707	—
ZL2AFZ	1890	—	1890	—	—
ZL2ARL	1053	59	633	361	—
ZL3JA	2392	514	1878	—	—
ZL3LL	1167	1167	—	—	—
ZL4CK	1823	299	1509	15	—
ZL4GA	1024	—	1024	—	—

## PHONE—

Call	Total	40	20	15	10
ZL1MQ	1084	75	698	169	142
ZL1PA	503	—	503	—	—
ZL2AJB	239	—	—	239	—

## LISTENERS—

ZL1—C. N. Arvidson, ZL111	559
ZL2—R. E. Lepper	634

## OVERSEAS

C.W.—	Pts.	C.W.—	Pts.
CX2AM	48	PA0ZL	84
DL3DD	198	PA0OI	4
DM2ABK	135	PA0RJC	1
DL7EN	91	PJ2AN	72
DL1QT	63	PY1LADA	570
DL1EJ	9	PY2AFS	270
DL1YA	1	PY1ANR	126
EA3GF	28	PY3QX	28
EL2T	9	PY2BNX	12
FORM	60	SM5LL	400
F5AT	35	SM7AVA	319
FBYZ	30	SM3AKM	280
FSMS	28	SM3CO	231
FJ3A	1	SM5SDW	200
FK3AC	120	SM6VY	25
FK3AO	98	SM5BTX	1
G6XL	198	VE7ZK	704
G2HPF	40	W1MX1	261
G3GSZ	18	W1RWP	128
G3CXO	12	W1UGH	45
GI4RY	28	W1NLM	15
HB9DB	4	W1HV8	12
IIQJ	32	W1MAN	6
JA3BB	683	K2EDL	940
JA1CR	627	W2WZ	680
JA1SR	390	W2EQS	102
JA1ACA	160	W2FBS	66
JA2BL	98	W2CC	15
JA7AD	98	W3VKD	657
JA1INI	6	W3EPR	40
J48AA	1	W4KVX	558
KG1IK	9	W5VHR	968
KG6AGC	360	W5CAY	158
KJ6FAB	28	W5DXW	108
LA1AD	1	W5OLG	105
LUTJO	30	W6BYB	1221
ODSLX	28	W6LDD	1087
OE1ER	168	K6DDO	78
OH1PW	176	W7SFA	1331
OH6OB	152	W7PQE	935
OH1TI	112	W8JIN	680
OH2CQZ	112	W8UVZ	96
OH2NQ	35	W9ABA	378
OH2VZ	25	W9FKC	72
OH2XX	24	W9BMM	35
OH3SR	24	XE1XB	224
OH2VN	16	YU3BC	462
OK1KTI	84	YU2HO	147
ON4FU	77	9S4AX	104
OZ3FL	105		

+ Multiple operator.

† Check log.

## Other Check Logs—

C.W.— HB9GY; Phone: KH6BES and

## LISTENERS—

Switzerland—E. Heritier ..... 30

Japan—Mitsuru Sano ..... 341

Bulgaria—Mladen Georgiev ..... 175

England—J. L. Hall, BRS19107 ..... 390

R. W. Thomas, BRS15822 ..... 310

Finland—Kai Lindfors, OH-413 ..... 30

Norway—F. S. Aabech, LA-M-3053 ..... 162

A. L. Sangwill, LA-M-3057 ..... 4

Netherlands—H. Frieke, NL864 ..... 4

U.S.A.—Ben Adams, Jr., W2-SWL ..... 60

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AMATEUR BANDS

ACCURACY 0.02% OF  
STATED FREQUENCY

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Mounted ..... £3 0 0

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**MAXWELL HOWDEN**  
15 CLAREMONT CRES.,  
CANTERBURY, E.7,  
VICTORIA

# QQE03/12—DOUBLE TETRODE

The QQE03/12 is an indirectly heated miniature r.f. double tetrode intended primarily for use as a driver, output amplifier or frequency multiplier at frequencies up to 200 Mc. It can also be used as a Class B audio frequency power amplifier and modulator.

The tube is rated to dissipate 5 watts at each anode in continuous service. It is internally neutralized. The heater is designed to withstand the battery voltage fluctuations encountered in mobile service.

## GENERAL DATA

**Cathode:** Indirectly heated, oxide coated.

Heater sections in Parallel Series

Heater voltage<sup>1</sup>, 2 ... 6.3 12.5 V.

Heater current ... 0.82 0.41 A.

1—Occasional operation at 5.5 or 7.5 volts with parallel connected heaters (10.8 or 15.6 volts

with series connection) is permissible.  
2—The tube may be used with only half the heater current during the stand-by period of a transmitter in order to reduce heater current consumption during that time.

### Direct Interelectrode Capacitances:

Each Both units

unit in p.p.

Output capacitance ... 1.8 1.4 pF.

Input capacitance ... 6.2 5.1 pF.

Anode to grid No. 1 (internally neutralized) ... 0.1 max. pF.

### Amplification Factor (each unit):

Grid No. 2 to grid No. 1, 7.5.

### Mutual Conductance (each unit):

At anode current of 30 Ma., 3.3 Ma./V.

**Mounting Position:** Any. If the tube is mounted in a horizontal position it is essential that pins 2 and 7 are placed in a vertical line.

**Cooling:** Radiation and convection. The use of a closed screening can is not permissible.

**Size:** Overall length 78 mm. max.

Seated length 72 mm. max.

Diameter 22 mm. max.

**Base:** Noval.

**Socket:** 5908/38.

Pin 1—control grid g<sub>1</sub> of unit No. 1.

Pin 2—cathode k and beam plates s.

Pin 3—control grid g<sub>2</sub> of unit No. 2.

Pin 4—heater f.

Pin 5—heater e.

Pin 6—anode a of unit No. 1.

Pin 7—screen grid g<sub>2</sub>/s (both units).

Pin 8—anode a' of unit No. 2.

Pin 9—heater mid-tap f.

## H.F. CLASS C TELEGRAPHY

(up to 200 Mc.)

### Operating Conditions (2 units in p.p.)

—I.C.A.S.—

Frequency ... 200 200 200 Mc.

Anode voltage (= supply voltage) ... 300 250 200 V.

Screen grid voltage ... 200 ... V.

Control grid bias ... -45 ... V.

Screen grid dropping resistor ... 27 8.2 k.

Common control grid resistor ... 18 15 k.

Peak grid-to-grid driving voltage ... 130 120 130 V.

Anode current ... 50\* 40\* 42\* Ma.

Screen grid current ... 3 2.4 3.1 Ma.

Control grid current	1.5*	2.5	3	Ma.
Driving power	0.1*	0.15	0.18	W.
Anode input power	15*	18*	8.4	W.
Anode dissipation	5.8*	3.5*	3.4	W.
Screen grid dissipation	0.6	0.45	0.55	W.
Output power	18.5	13	10	W.
Efficiency	62	65	60	%
Useful output power in load	16	11.2	9	W.
* Per Section.				

## H.F. CLASS C ANODE AND SCREEN GRID MODULATION (up to 200 Mc.)

### Operating Conditions (two units in p.p.)

I.C.A.S.

Frequency ... 200 Mc.

Anode voltage (= supply voltage) ... 200 V.

Screen grid voltage ... 173 V.

Common control grid bias resistor ... 15 k.

Peak grid-to-grid driving voltage ... 130 V.

Anode current ... 2  $\times$  43 Ma.

Screen grid current ... 3.1 Ma.

Control grid current ... 3.3 Ma.

Driving power ... 0.2 W.

Anode input power ... 3  $\times$  8.6 W.

Anode dissipation ... 3  $\times$  3.7 W.

Screen grid dissipation ... 0.94 W.

Output power ... 9.8 W.

Efficiency ... 57 %

Useful output power in load ... 8.8 W.

## A.F. CLASS AB AMPLIFIER OR MODULATOR

### Operating Conditions—Class AB1

Anode voltage	300	250	200	V.
Screen grid volt.	200	200	200	V.
Cont. grid volt.	-21.5	-21.5	-21.5	V.
Load resistance between anodes	10	8	6.5	K.
Driving voltage peak to peak	43.5	44.5	43.5	V.
Anode current	36*	34.5*	33*	Ma.
Screen grid current	6.3*	5.2*	7*	Ma.
Anode input power	10.8*	8.65*	6.6*	W.
Anode dissipation	4.8*	4*	3.1*	W.
Screen dissipation	1.3*	1.3*	1.4*	W.
Output power	12	9.8	7	W.
Total distortion	2.5	2.7	3.2	%
Efficiency	58	54	55	%
* Per Section.				

### Operating Conditions—Class AB2

Anode voltage	300	250	200	V.
Screen grid volt.	200	200	200	V.
Cont. grid volt.	-21.5	-21.5	-21.5	V.
Load resistance between anodes	6.5	5	5	K.
Driving voltage peak to peak	64	67	54	V.
Anode current	50*	50*	41.1*	Ma.
Screen grid current	5.7*	6.5*	9.5*	Ma.
Control grid current	0.66*	0.62*	0.22*	Ma.
Driving power	0.02*	0.02*	0.01*	W.
Anode input power	15*	12.5*	8.22*	W.
Anode dissipation	6.25*	5.5*	3.87*	W.
Screen dissipation	1.2*	1.3*	1.9*	W.
Output power	17.5	14	8.7	W.
Total distortion	5	5.5	6	%
Efficiency	58	56	58	%

# QE04/10—POWER TETRODE

For use as h.f. amplifier, oscillator and frequency multiplier. The QE04/10 is an indirectly heated beam tetrode with aligned grid construction to minimize screen grid current. It is rated to dissipate a maximum of 7.5 watts in the anode, and is particularly suitable for use at frequencies up to 150 Mc. as high frequency amplifier or frequency multiplier.

## GENERAL DATA

**Filament:** Indirectly heated, oxide coated, 6.3v. (d.c. or a.c.) at 0.6 amp.

### Capacitances:

C<sub>g1</sub> = 0.1 pF.

C<sub>gk</sub> = 8.0 pF.

C<sub>ak</sub> = 5.4 pF.

### Amplification Factor:

Grid No. 1 to grid No. 2, 5.5.

### Mutual Conductance:

At anode current of 25 Ma., 1.9 Ma./V.

### Mounting Position:

Any.

### Cooling:

Natural.

### Size:

Overall length 3-1/16 inches max.

Base diameter 1-1/8 inches max.

Envelope diameter 1-1/8 inches max.

Socket: 40212.

## CLASS C TELEGRAPHY

### Operating Conditions

Frequency ... 10/ 25/ 50/ 75/

20/ 75/ 100/ 150/ Mc.

Anode voltage ... 300 300 300 300 V.

Screen voltage ... 250 250 250 250 V.

Cont. grid bias ... -30 -30 -30 -30 V.

Anode current ... 41.2 43.3 38.4 36.8 Ma.

Screen current ... 8 5.5 2.6 2.1 Ma.

Cont. grid cur. ... 0.8 1.2 1.5 1.1 Ma.

Peak driving voltage ... 81 124 120 144 V.

Driving power ... 0.065 0.15 0.2 0.16 W.

Anode input ... 12.4 13 11.5 9.2 W.

Anode dissipation ... 6.8 7.4 7.1 6.9 W.

Output power ... 5.6 5.5 4.4 2.3 W.

Efficiency ... 45 44 38 25 %

## CLASS C FREQUENCY MULTIPLIER

### Operating Conditions

Frequency ... 10/ 25/ 50/ 75/

20/ 75/ 100/ 150/ Mc.

Anode voltage ... 300 300 300 300 V.

Screen voltage ... 250 250 250 250 V.

Cont. grid bias ... -30 -30 -30 -30 V.

Anode current ... 41.2 43.3 38.4 36.8 Ma.

Screen current ... 8 5.5 2.6 2.1 Ma.

Cont. grid cur. ... 0.8 1.2 1.5 1.1 Ma.

Peak driving voltage ... 81 124 120 144 V.

Driving power ... 0.065 0.15 0.2 0.16 W.

Anode input ... 12.4 13 11.5 9.2 W.

Anode dissipation ... 6.8 7.4 7.1 6.9 W.

Output power ... 5.6 5.5 4.4 2.3 W.

Efficiency ... 45 44 38 25 %





# TELEVISION RECEIVERS

## Intermediate Frequency Recommendations by the Australian Broadcasting Control Board

Of interest to all Amateurs is the present recommended set-up of Intermediate Frequencies for Television Receivers.

As far back as 1951, the Australian Broadcasting Control Board "reached the conclusion that the most suitable choice would locate the picture and sound carriers in the band 30-40 Mc."

In regard to the 20-30 Mc. band, the Board stated: "There are, however, a number of high-powered stations operating in this band in Australia, not far from capital cities. It is desirable also to avoid the 28-29.7 Mc. amateur band, because there are many amateur transmitters of moderate power in capital cities, and they are potential sources of interference. The use of intermediate frequencies in the 20-30 Mc. band would also involve intermediate frequency harmonic interference with the second channel, and image interference between the 62.5-70 Mc. channel and the channels in the 90-108 Mc. band. The use of intermediate frequencies in the 40-50 Mc. band (as is now being adopted in the United States of America) is impracticable if a channel as low as 44 Mc. is employed. The remaining choice is in the 30-40 Mc. band, and intermediate frequencies can be chosen there, to avoid image interference and the majority of the spurious responses and intermediate frequency harmonics which are likely to be serious. At the same time oscillator interference occurs in bands likely to cause little interference to other services. Where oscillator interference from receivers tuned to one channel falls in other television channels, it is considered possible to avoid interference by allocating such channels to stations in different districts.

"These considerations of intermediate frequency selection are based on the assumption that a conventional receiver design is employed. The Board, however, is not unmindful of the probability that a large percentage of receivers designed will be of the inter-carrier type which presents substantial advantages to the receiver designer. The problem, however, is not materially affected by this factor as the intermediate frequencies chosen will be suitable for use with such receivers. The chief difference lies in the fact that for the higher channels, oscillator frequencies can be below the channel frequencies, so that in these cases the oscillator can be in a different place in the frequency spectrum.

"For the reasons mentioned above and a number of other more detailed considerations, the Board is of the opinion that intermediate frequencies in the 30-40 Mc. band are most suitable for recommendation to the industry . . ."

Reaching more specific detail at a later date (1955), "In previous reports, the Board drew attention to the need for

determining a standard intermediate frequency for television receivers and stated its intention of conferring with manufacturers on this important matter. It is essential that standard intermediate frequencies for vision and sound should be employed for all receivers used in the Commonwealth, in order that the Board may be able to make frequency allocations for television stations in specific locations in such a manner as to avoid mutual interference between television and other services arising from image responses, intermediate frequency difference responses and beat oscillator radiation. If a multiplicity of intermediate frequencies were to be used in receivers, it would be impracticable to ensure maximum protection from interference, and receivers using non-standard intermediate frequencies could not be used on certain television channels without retuning of the intermediate frequency sections.

"During the year, the Board had several discussions with representatives of the receiver manufacturing industry arranged through the Associated Chambers of Manufactures of Australia, as a result of which the Board decided to recommend to manufacturers that the following intermediate frequencies should be employed in all television receivers used in Australia:—

Sound carrier .. 30.5 Mc.  
Vision carrier .. 36 Mc.

It was agreed that these frequencies should be adhered to within  $\pm$  0.25 Mc. and that the oscillator frequency should be above the channel frequency. Although representative manufacturers expressed the view that higher values of intermediate frequencies would, for a number of reasons, be preferable, it was agreed that the above standard frequencies should be used because of the difficulties of protecting higher frequencies from interference from industrial, scientific and medical equipment in the internationally assigned band of 40.83 Mc. The Postmaster-General's Department has agreed to arrange frequency assignments in the band encompassing the above intermediate frequencies as far as practicable to ensure protection of television services from interference by other services."

## AUSTRALIAN V.H.F. RECORDS

Band Mc.	Stations	Date	Miles Rec'd	World
50	VK5AKL-WTAZC/KM16	26/8/47	3385	10500
	VK6KGN-VK8CG	3/1/58	3828	
	VK8SW-VK2CG	3/1/58	3816	
	VK3DQ-VLDGS	26/12/57	3804	
	VK3JM-VRZCB	30/12/57	2406	
	VK7QZ-VK9DB	—	2311	
	VK7LZ-VK9DB	—	2311	
144	VK8GL-VK6BQ	31/12/51	1328	1490
	VK5QR-VK6BQ	9/2/52	1286	
	VK3GM/1-VK7LZ/PP	9/2/52	817	
288	VK5MT/5-VK5H0/5	13/6/52	106	
	VK8AF/1-VK5AA/1	31/3/54	63.8	
	VK6BQ-VK6DW/1	19/4/54	25	
876	VK3ANW-VK5AJKE	11/12/49	81.6	
2300	VK5ANW-VK5AJKE	15/3/50	8.1	180

The above contacts are best known to date, but what of VKs 2, 4, and 7 contacts? Please send full details of your best contacts through your Division to "F" for giving particulars of both stations' locations at the time of contact so that your record may be listed above.

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VCL-26

## YL CORNER

Calling all YLs and XYLs. This is your column and here in it we would like to have your news. Very few of the Amateur fraternity realize that there are twelve licensed YL operators in VK land, some of whom have been licensed for over twenty-five years. Through this column we hope to introduce them to you along with a description of their rigs, their activities in Amateur Radio, their interests other than Amateur Radio and their domestic commitments. In fact all about what goes to make one of the female sex become what is known as a "YL".

We also have room here, too, for contributions from XYLs for some of those funny little stories such as "I married a radio crank", or "There's a queer sort of wireless man lives at our place" or "Life with the OM", and how Amateur Radio does or does not fit in with the rest of family life. What about writing us an amusing article along these lines? What about your harmonics, do they put a spoke in Dad's works? Let's hear about some of the funny things they do. \*

### HALMS—AS SEEN BY AN XYL

During the earlier part of my life, I was unaware of the existence of "hams" apart from the variety which provides a tasty dish. (No doubt some radio hams could do that, too), but to get back to the point, I was quite unaware there existed a band of radio fends so named. Then along came my husband, and proved to be one of these things in disguise, as I found out merely by trying vainly to decipher an extraordinary muddle of wriggly lines interposed between peculiar oblongish circles situated here and there. These, I was informed, represent valves. Thus enlightened, I promptly forgot the incident. But the crafty devil had just started his onslaught.

Gradually, I became aware his interest was not always with me. This became evident by the unintelligible answers to some of my conversation. He preferred to read a thing called "Amateur Radio," which seemed to provide no end of interest for him.

One night, in the throes of a romantic novel, I was distracted by such words as "fidelity," "osculation," and someone called "Millie Amp"—whoever she was—emitting from the lips of my husband.

I decided to look into this book of his, but found my suspicions unfounded. In fact, I found the darn thing unreadable. It was then patiently explained that oscillation was the correct word, and that Millie Amp was no femme fatale, but precisely what it said—a very small portion of an Amp.

Next move was the arrival of some junk the "Hams" call it gear—but to me it's still junk. This consisted of a conglomeration of odds and ends, containing, so I was told, among other things, wires and bottles. The only bottles I've seen are the beer bottles he uses to fortify himself while listening

to a character called Jim give out each Sunday morning on a contraption referred to as a frequency. The said Jim seems of the opinion that something called a VK something-or-other tries incessantly to push him off a band of some description into oblivion each time he attempts to broadcast to his addicts.

Thus, I agree, is very inconsiderate and I would push them right back. Unfortunately, my husband does not seem to think this would solve the problem.

Sitting in pride of place in our sitting room is a horrible shabby box-affair—a moth-eaten piece of cloth protruding out the front. This, dear reader, is a speaker cabinet, and "Hams" seem unanimous in their approval of these in preference to a more up-to-date version. I don't myself, but then that is of no consequence.

Recently I caught this "Ham" of mine sneaking a form away in order to gain a ticket, which he informs me will allow him to carry out some experiments. He needn't add anything to that—and oh, heaven help me if he gets the darn thing.

—“SQUAWKER.”

P.S.—I've just heard something about woofers, squawkers, and tweeters. Wouldn't it?

★

I remember hearing of one young harmonic who took some of Dad's resistors and condensers to school and sold them. Unhappily, he had to pay for cigarette cards. He was as popular with the older boys and he himself felt he had made such a good bargain as there were plenty more "dopers" and sisters" at home in Dad's box.

One small item of news I heard recently is that there are two Olds thumbing a lift to the W.A.C. meetings down their way—XYLs. Mrs. J. Zanabhar-Sugar (Gwenella Hull) and Mrs. J. Tare-Fox (Nina Dennis), have got their driving licences. Their poor Olds are having considerable difficulty in getting even a little loan of the keys to the car these days. You know, their husbands should really be very pleased, after all that makes two more potential chauffeurs for the fox hunts and 80 mx tx hunts.

Well now, what about it? We'll hope to have those contributions rolling in very soon. Contributions should be addressed to the Sub-Editor for YLs, Mrs. Phil Moncur, 235 Union Road, Ascot Vale, Vic.

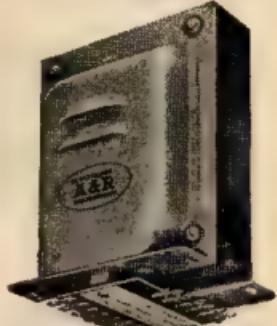
In next month's YL Corner we will introduce you to YL W.A.C., Austin Henry, the first in the world to win the YL-WAC-YL.

### TRADE REVIEW

#### Power Transformers by A & R

A. & R. Electronic Equipment Co. Pty. Ltd. have just released a new range of power transformers covering all standard voltages, with current ratings from 100 to 200 Ma., and designed for a maximum temperature rise of 50° centigrade.

As illustrated, these vertically-mounted transformers are fitted with ventilated pressed steel covers, finished in A. & R.'s standard silver-grey hamertone, with black cores. All types have a neatly-designed and clearly-designated lugged terminal board.



Other additions to the range include step-down transformers of semi-portable and fixed installation types, and also available is a kit comprising a power transformer, power choke and frame output transformer for the Philips' television receiver circuit.

Accent is again on quality, and A. & R. have retained throughout the same high standard of performance and finish that characterises this Company's popular range of audio transformers.

These excellent transformers are now available in all States, and A. & R.'s distributors listed in the advertisement in this issue will be pleased to supply full details.

## Duralumin Aluminium Alloy Tubing for Radio Aerials

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## SHORT WAVE LISTENERS' SECTION\*

Some chaps think a lot about the elusive DX, but not I'm afraid a lot of them think little about chaser correspondence for this page. Why? Worked All States isn't in it with this. So come on VES, 7 and 8. We'd very much like to hear from you. Now for all the news from VK3, 3, 4 and 5.

### NEW SOUTH WALES

Stan Abbey writes again this month and encloses a list of stations he has heard this year. Would like to know how we down here manage to hear all the DX listed in our reports. Well, judging by his own list, he's not doing too badly himself. The weather at Cooma has not been very pleasant and band conditions have not been the best, writes Stan. Jack Ashby, the other a.w.l. in Cooma, is understood to have been working hard lately and has not had much time for a.w.l. listening to you Jack. Jack's gear consists of an Emerson radio with a magnetometer using an EFO ahead of it, together with a five-tube home-brew for 20 m. built into a rack and panel. The antenna is a centre fed 60 m. dipole. Jack 2AO is a centre fed 20 m. dipole. Jim 2AB is a radio which is probably still finding time to get on the air. Signs 2 x 9 on 30 m. down here Jim. For the information of other a.w.l.s. Jim does QSL.

Any other VK3 listeners can write to Stan Abbey at Mimosa Street, Cooma, 65, and give him any information for this page to pass on to me.

### QUEENSLAND

A very interesting letter was received from Murray East, at Toogoolawah. Murray comes from Noosa and has been in VK land about 3½ years. Henry is using an AR 10 m. but does not particularly like the separate coil boxes associated with that make of rx. He has built a tank condenser, a small one, and mounted it on an insulator. The tank was subjected to squelching and hum, so he has dropped that project for the moment. Henry is studying

hard and soon hopes to sit for his ticket. One or two of the Toogoolawah chasers may be able to get to know Henry and give him some assistance as he seems to be having a little trouble in his activities at the moment.

**June Meeting.**—At the meeting of the VK3 Group, Fred JYS gave us a talk on Construction and Operation of V.h.t. Gear. Fred discussed the building of simple converters for two metres and also stressed the usefulness of a grid dip oscillator in finding the band. Fred had brought some mobile gear along with which to demonstrate and at the conclusion of the meeting contacted Jim 3ABA on 2 m. Thanks very much for this very interesting evening.

**Coming Events.**—As a result of a slight misunderstanding it was published that Geoff 3DF would be giving a talk at the July meeting of the Group. However, Geoff has moved to VK5 and therefore will not be available. Still come along to the meeting, though. Members of the Group meet at the room 181 Queen Street, Melbourne, at 8 p.m. on the last Tuesday of each month. All who can attend are invited to join our Group in a visit to be made to "The Argus" newspaper offices on Tuesday evening, 17th July. This visit is timed to begin at 8 p.m. and you are requested to be outside "The Argus," Cr. Elizabeth and Latrobe Sts., no later than 845 p.m.

### QUEENSLAND

Don Bryant keeps the VK4 boys on the map this month. Evidently they are hoping to increase their number of a.w.l.s. Don and his crew are going to send notices to schools and clubs advertising their meetings and activities. Don tells me he is in the Army sign. Quite a number of Amateurs have first been bitten by the bug whilst in the outfit, and putting up their new antenna, ground plane, and feed dipole and a folded dipole. Boy, what an antenna farm he must have. He has about three skywires up already, I believe. Don says that he has plenty of room in the back yard and can also use the yard next door if it satisfies. How wonderful. Personally I haven't room to swing a cat or a dud tube for that matter.

**SOUTH AUSTRALIA**  
We have now lost one VK5 correspondent and gained another. The annual meeting of the VK5 Group was held in June and the re-election of office-bearers resulted as follows: President, Jim Firth; Secretary, Len Cragg; Vice Pres., Artie Ebdon; Corresponding Sec., Mac Hilliard. I must offer my thanks to Len Cragg who has in the past done a very good job as correspondent, and welcome Mac Hilliard to the job. He won't last long in the job though I can tell you, you and I will soon be coming to the same conclusion. Sighs. Let me reinforce the VK5 Group. We'll be glad to see you again Mac.

Prior to the annual re-election in the VK5 Group, the presentation of a Silver Cup was made to John Campbell, WLA-L6011, who won the recent VK-ZL S.W.I. Contest. Congrats to you John. Runner-up in the contest was Len Cragg, to whom we send our congratulations.

The July meeting of the VES Group will consist of a talk to broadcast station EKA. Members of the VES Group are looking forward to the R.D. Contest to be held in August. QSL's received recently by some of the boys include GH9OL to John Campbell and CR7CQ and ZS1KK to Mac Hilliard.

### PERSONAL PARS

Following the example of SEL, I, too, am taking steps to form a club. However, they have not given me much help as yet. Bert Stebbing has that big bus going again, but has not yet appeared with mobile a.w.l. gear. Michael Ide is settling into his new QTH, but was unable to attend the meeting with us. On winning the listeners' section of the Farns Vic. Scramble, Michael Arthur 3AHD is understood to be busily painting his latest acquisition. Your truly has many plans in the making, but at the moment, including a 144 m. 50 ft. mast, new antenna converter for 144 and 28 Mc., QSL cards and ways and means of getting chaps in VK5, 7 and 9 to write. David 3ZAQ (WLA-L3003) seen at the competition against together with David 3ZAU (WLA-L3001) who appears to be settling into his new QTH. His car looks like a travelling radio workshop at the moment. Something big is in the offing apparently.

## SPECIAL

BRIGHT STAR RADIO are pleased to announce an addition to their line of Crystals. We are now manufacturing—

## VACUUM MOUNTED CRYSTALS

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Higher frequencies can be supplied.

### ADVANTAGES OF THIS TYPE—

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Price depends on the tolerance and frequency required, and will be quoted upon request.

**BRIGHT STAR CRYSTALS** may be obtained from the following Interstate firms: Messrs. A. E. Harrold, 123 Charlotte St., Brisbane; Gerard & Goodman Ltd., 192-196 Rundle St., Adelaide; A. G. Healing Ltd., 181 Pirie St., Adelaide; Atkins (W.A.) Ltd., 894 Hay St., Perth; Lawrence & Hanson Electrical Pty. Ltd., 56 Collins St., Hobart; Collins Radio, 409 Lonsdale St., Melbourne; Prices Radio, 5-6 Angel Place, Sydney.

# BRIGHT STAR RADIO

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# FIFTY-SIX MEGACYCLES AND ABOVE

## NEW SOUTH WALES

Although several stations took part in the recently concluded 3 m. home station fox hunt only a few logs were returned to the contest manager, Horrie 2HHL. Results: Win for Bob 2OA with 30 points, followed by 2AQC 14, 2AFM 10, and 2ECP 9 points. John 2ATO was the mobile station and made broadcasts from different locations. Anyone desirous of knowing the exact locations of the fox should get in touch with Horrie 2HHL.

Many new country stations are being heard and worked in the New South Wales. These include 2ZAB, 2BZB, 2BZC, 2BZD, 2BZU, 2ZAN, 2BZT, 2AUU, 2CWA, and several other 2 m. DX Amateurs are about. SIR 2AVK, of Canterbury, is putting out good signals also. It appears that more and more Sydney 2 m. stations are getting mobile. Ted 2OA and 2AUZ have been heard recently. Almost any night and every week-end there is plenty of activity on the band. Have heard old-timer Don 2NC putting out a very good sig. Coastal stations should also be out for 2ZAB, who is running 150w. on 8 m. as another new station to listen for is 2TC of Bundanoon.

After the usual Sunday night broadcast on 3 m. on 24th June a surprise scramble was well attended and resulted in the following scores: 2AQC 14, 2AFM 10, 2BZB 9, 2ZAB 7, 2BZC 5, 2BZD 5, 2BZU 4, 2BZT 4, 2AUU 3, 2ZAN 1, 2AUU 9, 2ZAL 8, 2ZCH and 2M 6, 2JX 4. It is noteworthy that 2JX made his four contacts in the last five minutes of play.

Now for the Northern 2 m. v.h.f. is as follows. The only dinger in the 24 Mc spectrum is that Jack 2ADT has re-constructed his beam for 8 m. and has managed to get it atop his 90 ft. bush pole which is about 3 in. diam. at the top. It is a fine beam.

I must say is becoming most encouraging. A new addition to the fraternity in this area is 2ZAD who has taken up residence at Tamworth. Frank 2AFT will have to look to his laurels as he is building up in the bands but is continuing to be side-tracked.

It is believed that Ben 2ABT of Coonabarabran, a likely starter and that the northern group will not let up on him now. Geoff 2UU has been altering his 2 m. and when last heard had 2000 w. on 8 m. and was driving his troubles; do a good job, Geoff, and yet that QV6S/46 going. BANU listens each night from 0.30 to 0.00 p.m. and his only contacts have been 2VU. Ken has heard 2E7's contacts occasionally and is now trying to contact for 2E7V who is using a super-regen at Elliston, but results negative so far. When Tas builds that 3 over 8 beam it is hoped that contact will be made. Further north to Inverell it is reported that Jack 2ADT and Ted 2EN are having results to hand.

The greater part of the Sydney V.H.F. Group meeting held on Friday, 9th July, was taken up by a most interesting lecture delivered by Mr. Harrant, of the P.M.G.'s Department, on the transmission of signals by very short waves. He explained 180 m. mobile telephone transmission techniques as well as micro-wave transmissions and pulses on 8000 Mc and 4000 Mc.

We are all now eagerly looking forward to the mid-winter contest.

## VICTORIA

Roger Choate, VK6KHK, was a very welcome visitor at the last fox hunt. Roger was along with the fox car crew in the hunt to the town of South Yarra, St. Kilda, Albert Park and then over to Camberwell. At one stage in the hunt the fox was delayed with the red traffic lights and the fox car crew had a few very tense moments. The competition was very keen and the 2AUY, 2ADU, 2ZAB and 2AQC crews along with the cross road and bend on getting through the lights while they were still green, sailed right past in front of the fox car. The next moment the fox noticed 2VZ on the opposite side of the road and was waiting for the traffic lights to change. He fell but just couldn't get out of this one, however, 2VZ was apparently so intent on listening to the signal that he forgot to look for the fox, and 2LNT, the fox, was able to make a right turn and immediately gained 2VZ's car and sneak away undetected. He then went and hid in a parking area amongst a lot of cars. He was soon ferried to our here by 2AQC and 2ADU. This was really a relief to a fox as he was beginning to think in case a passing attendant came along and demanded a parking fine.

The final location was at the home of associate member, George Robertson, in Camberwell. Roger, 2VZ, and the fox car crew had seven QSOs and had supper together and entered into an 89 QSO on the evening's chase. The winners were the two Rays, 2KD and Hay Price, second place went to the two Davids,

2ZAT and 2AQC, and third place to 2AQC. Prizes were extended to George and Jason Robertson for opening their home to the Group.

At the last V.H.F. meeting the Group was entertained with a very absorbing lecture on "Pulse time modulated a.m. radio telephone systems". An audience given by Mr. Alan Hart, who is Divisional Engineer of the radio telephone section of the P.M.G.'s Department. This lecture was a follow-on to the lecture Mr. Hart gave us last year, and he prefaced his lecture by a short run through what he had shown us last year, so as to enable those who had not attended the previous lecture to be up to date with the rest of the members. From this point he then carried on with greater detail and took us further afield with his work in the radio telephone section. The whole lecture was well illustrated with slides, and perhaps because of Mr. Hart's particularly friendly personality, question time started in earnest right from the beginning of the lecture. Mr. Hart has the notes of his work right at his finger-tips and appeared to enjoy the opportunity of answering questions.

During the general business of the meeting, David 2ZAQ was presented with his certificate award for the first contest containing 100 stations on v.h.f. bands. This is the fourth certificate awarded and David is the first "Z" call to qualify for the award.

Are you ready for 54 Mc? It has been reported that 2L Amateurs have changed to 54 Mc. and 2L has been awarded. This is generally a minor Interstate opening on these frequencies round about August, although the main DX season usually occurs during the summer months.

Keep a listen for Don 2RS, of Albury, who calls on 8000 Mc. He has been working by SSB and is now working on 54 Mc. He has been heard by a number of Melbourne stations.

Max 2ZCW worked SMT on 10/6/56 at 0.30 p.m. SMT was portable on Mt. Lofty outside Adelaide and was running 10 watis to a 233 and a 2 tube converter fed into his car, using a 1000 w. magnet. Reports are 5 and 6 both ways. Max has purchased a QDEM/60 and is hoping for big things in the very near future.

**WILLIAM ALBRIGHT**  
The monthly meeting of the V.H.F. Group was held on Friday, 10th June, at 2ADU's residence with the usual attendance and enthusiasm, which is characteristic of the Group as a whole. After the business had been disposed of attention of the meeting was given to a lecture on Wave Propagation. The lecturer's knowledge of the subject was soon apparent and at a late hour was given a hearty vote of thanks by all present. 2CC appeared with a signal on 3 m. the other day; nice work Frank, that 215 was doing a great start, even though suffering from lack of volts.

2L on 144 Mc. We were pleased to work VK2KARG on 3 m. while on a business visit to VK2. Hope you enjoyed your holiday. It was rather a hard start, but a good finish. Eddie worked India, 2GK, 2ZAU, 2EAV, 2ZAB, 2ZAT, 2BIO, 2AW and 2ZAA. We also worked Ben from the kite on the way back East.

Cold weather lately has kept activity to a minimum.—2ZAV.

## SPECIAL VKIACA QSL CARD

13th to 16th August, 1956

From 13th to 16th August, the Annual Hobbies Exhibition will be held at the Albert Hall, Canberra, Australian Capital Territory, for charitable purposes. As in past years, the Canberra Radio Club will participate by operating an Amateur Radio Station from the Exhibition Hall under the Club's call sign VKIACA.

To mark both the Exhibition and the allocation of the VKI call sign to Amateur Radio licensees in the Australian Capital Territory as from 1st June, 1956, a Special QSL Card will be issued for contacts with VKIACA during the Hobies Exhibition.

So keep your ears open for VKIACA on the Amateur bands between 13th and 16th August inclusive.

## "GORLER" COIL TURRETS AVAILABLE NOW



Will match any impedance from 40 to 1,000 ohms over 60 to 100 Metre Amateur Bands.

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Six-Pi R.F. Choke for use with Pi-Coupler. Inductance: 3.5 mH., maximum current rating, 160 Ma.

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## "GELOSO" PI-COUPLED

### SPECIFICATIONS:

Dimensions: Length 6 1/4", width 4", height 3 1/4".

Frequency range: 500 Kc. to 30 Mc. (six bands).

All coils complete with trimmers and slugs.

Stages available: R.F., Mixer, Osc. Turret contacts—five per coil—rhodium plated.

Tuning condenser required: 3 gang 200 p.f. max. per section.

All circuits are Hi-Q with only best quality ceramic trimmer condensers and polystyrene coil formers.

Any coil bank may be extracted for modification without interruption to operation of other banks.

£20 (list)

(Discounts to Amateurs)

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**"Send SOS; it's the new call and it may be your last chance to send it!"**

The suggestion was made in the wireless room of a ship everyone believed was unsinkable.

A radio officer looked up and laughed.

The time was 12.45 a.m., the date, April 15, 1912, and the sinking "Titanic" sent out the first SOS in history.

Today, a danger as disastrous to shipping as an iceberg is — *rust*.

Rust is costing Australia more than £3 every second of the day.

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With such coatings, Shell is helping Australia to remove the £100 million rust-stain from the balance sheet of the nation.

\*Shell Ensus Oils.



# FEDERAL, QSL, and



# DIVISIONAL NOTES

## FEDERAL PRESIDENT'S REPORT 1955-56

It is my privilege to present the annual report of Federal Affairs covering the period March 1955 to April 1956. Little time has been available for the preparation of this report as I have been dogged with sickness and personal business affairs. I feel there has been steady progress in our year's programme of work. It would be remiss of me if I did not mention that there will remain a number of business on our agenda, but this will be gradually finalised now that a lot of minor matters have reached satisfactory conclusions. Turning now to the details of our operations for the period under review.

### REGULATIONS

Our dealings with the Administration have been maintained on a healthy personnel basis with several special meetings to discuss additional operational privileges for the Australian Amateur, the two most important being the relaxation of Amateur Radio restrictions for mobile-portable operation for 24 hours without a permit, on which all will have received official notification. The former, although not perhaps affecting a large number at present, nevertheless represents a significant amount of amateur endeavour and representations to the Department which at long last bore fruit. I am sure that this latter privilege will appeal to most Amateurs and is indeed a welcome relaxation of the former restrictions on this aspect of the Regulations.

### PUBLIC MATTERS

As promised at the commencement of the year, a completely revised issue of the Federal Policy Book has been issued to all Federal Councillors. This will be kept current from now on by the issuance of amendments as the year passes. A resolution was passed at the dropping of the Federal Convention at Easter. It is now three years since a Convention was held, and I am certain that there are matters of import within each Division which can be addressed more effectively through the convention to the benefit of all. I sincerely trust that the next Convention will be held not later than Easter 1957.

### MEMBERSHIP MATTERS

This year has also seen the advent of a new Division—the Papua and New Guinea Division—which is another historic milestone in the growth of the Institute. I was privileged to deliver a speech to the new Division via tape recorder and to receive a copy of the VK3WV, is already operating and maintaining a close bond between outlying members. The membership within Divisions continues to increase and this has been stimulated to some extent by our limited licensees and the recently instituted Short Wave Groups in Divisions. It should be the aim of all Divisions to secure membership of ALL full transmitting members so that our Institute encompasses as many as possible of those engaged in Amateur Radio as a hobby.

### NEWSLETTER

During the period our Newsletter was inaugurated and I hope it has filled the gap between official letters and personal correspondence to Divisions as well as providing some material for general broadcast of interest to the members.

### OVERSEAS SOCIETIES

Our friendly relations with the I.A.R.U., A.R.R.L., R.S.G.B., and the N.Z.A.R.T. have all continued during the period and I look forward to even greater liaison with these Societies on matters of mutual interest in the future.

### VISITORS

Members of Federal Executive were approached to place the Federal Station, VK3WV, into operation during the period between Christmas and New Year holidays. The success of this venture was evidenced by the interest displayed by all who saw the station in operation, and by those overseas stations who created "one-pile" contacts with the station. In all some 600 contacts were made in 30 different countries during the ten days of almost continuous operation. I wish to record my thanks to all those who assisted with the installation and operation of the station, and especially to the Services who most generously supplied the bulk of the equipment. It is our present intention to institute a regular news service for disseminating information to all members for which purpose a new transmitter has been put into service. You will hear more of this in the coming year.

### AUSTRALIAN CALL BOOK

The continued success of this publication speaks well for the future. It is a tribute to the untiring efforts of the Publications Committee of the Victorian Division, who publish it on behalf of the Federal Council. I think you will agree that our aim to progressively improve the book has been carried out faithfully and I am sure the Olympic Year Editions will prove worthy of its present distinction.

### FEDERAL FINANCES

I am somewhat disturbed by the present state of Federal finances. As can be seen from the Federal Finance Book, the State of the Fund balance is very low for an organisation of our size. In addition, Account No. 2, which was set aside as a Convention Fund, is almost negligible. Divisions should make an effort to increase some income to help meet our future Convention needs. The last minute inroads into Divisional funds will be obviated if monies are put aside now. A revision of our present financial restrictions is also due, as the costs of operating has progressively increased over the last three years since a Convention.

### CONTEST AND CERTIFICATE MATTERS

The presentation of the W.A.V.K.C.A. award for overseas Amateurs has evinced great interest and is now established as one of the most sought after overseas contests in very favourable publicity for VK Amateurs. Some work has also been commenced on the Worked All States award for VK Amateurs. Further Membership Certificates have been printed and are now available for issue. The Federal Contest Committee has now completed the work of drawing up properly constituted Rules and Duties. They have instituted an up-to-date Register of all results of all Contests and Certificates issued since 1945, so that no omission or mistake should be made. Finisity has not yet been reached on the Remembrance Day scoring which is very difficult to actually predict, but every endeavour will be made to complete this as soon as possible. The Royal Hull Contest

was extended to include all v.h.f. bands, per Convention directive, thus enabling I.A.R.U.P. operators to participate. The Rules of the V.H.F. DX Contest, in conjunction with the N.Z.A.R.T., have now been stabilised as well as awards, and this contest promises greater popularity in the future. A willing band of helpers from the V.H.F. Division have assisted in the checklist of the N.Z.A.R.T. Contest, so as to attract entrants. A revision of V.H.F. scoring points have been deferred until after the 1956 Contest. Although the Field Day Contest attracted entries this year, log submissions were few, making the compilation and checking very difficult. Surely it should not require very much effort to send a log in for checking, even if the chance of winning a certificate is remote. The Federal Contest Committee has now completed the work of activity under the able guidance of Jim Vivian.

The Federal Awards Manager, Gordon Weyman, has handled 40 applications for the DX Contest, 10 for the N.Z.A.R.T. W.A.V.K.C.A. award, 4 for W.A.C. for W.R.E., 10 for D.U.P., and 1 for the W.A.S. award in all, 55 applications, which represent a lot of work.

The Federal QSL Manager, Ray Jones, and Traffic Manager, Doug Payne, in their respective spheres have performed their assigned tasks with great efficiency, thus making the tasks of Federal Executive a mile easier. To them and all other co-opted officers, not mentioned by name, I extend my sincere thanks for the service job they have carried out during the past twelve months. All have given a great deal of time to an honorary office, such being equally important to the smooth functioning and well governing of the Institute. I trust they will be well rewarded in the future and carry on their essential tasks in the future.

Last, but not least, I wish to thank all members of Federal Council and particularly Federal Executive, for the loyal support they have given me during my period of office. I make no mention especially of the Federal Secretary without whom the Federal Executive would not function. The personal letters and contacts he has made with members from all States

### WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE BALANCE SHEET AS AT 29th FEBRUARY, 1956

Current Liabilities, Creditors		£75 19 2	Current Assets—Trading		
Accumulated Funds—			Commonwealth Trading		
Balance 1/3/55 .....		£542 9 1	Bank No. 1 A/c. ....		£70 8 10
Less Deficit for the year ended 29/2/55 .....		86 4 10	No. 2 A/c. ....		11 2
		474 6 3	Cash on hand .....		9 0 0
			Debts .....		240 9 4
			Stock on hand .....		94 0 0
					£414 8 8
Fixed Assets (at cost less depreciation)—			Fixed Assets (at cost less depreciation)—		
Eddyson Model "840" Receiver .....			Eddyson Model "840" Receiver .....		
Trophy, R.D. ....			Trophy, R.D. ....		£18 0 0
Trophy, Ross Hull .....			Trophy, Ross Hull .....		10 10 0
Memorial Trophy .....			Memorial Trophy .....		8 4 0
Filing Cabinet .....			Filing Cabinet .....		21 0 0
Typewriter .....			Typewriter .....		51 0 0
					138 34 0
					£550 3 6

I have examined the books and vouchers of the Wireless Institute of Australia (Federal Executive). In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Federal Executive's affairs as at 29th February, 1956, and that the statement in the Expenditure Account is properly drawn up. I have examined the books and vouchers of the results for the year ended 29th February, 1955, according to the best of my knowledge and the explanations given to me, and as shown by the books. Stock on hand at 29th February, 1955, has been accepted on the certificate of the Secretary.

1st June, 1956.

REG W. ELLIS, Dip.Com., Chartered Accountant (Aust.)

### INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 29th FEBRUARY, 1956

EXPENDITURE		EXPENSES	
Badges .....	£7 4 8	Per Capita Payment .....	£172 11 0
Printing and Stationery .....	7 14 1	Sale of Badges and Log Sheets .....	7 8 0
Certificates .....	32 8 11	Loss transferred to Accumulated Funds .....	64 4 10
Decrepitiation .....	35 12 3		
Audit and Accounting .....	35 12 0		
Postage .....	5 0 0		
Telephone .....	18 10 6		
Scout Charges .....	6 8 6		
Scout Jamboree .....	2 8 3		
Postage and Duplicating .....	4 10 0		
Log Sheets .....	7 0 0		
Repair Typewriter .....	7 0 0		
Entertaining .....	32 11 0		
Sundries .....	30 16 7		
	£246 4 11	£246 4 11	

have commenced and bonded Federal Executive to all Divisions and made my own task easy and smooth. I thank all others and hope they will continue to serve the Institute in the future as unselfishly as they have in the past, and assure you of my own unspiring efforts towards the progress and prosperity of the Institute.

W. T. S. Mitchell, Federal President.

## FEDERAL QSL BUREAU

HAT JONES, VK3RJ, MANAGER

Divisional Managers please note the change of address of the W3 QSL Bureau to Box 460, Rala-Cynwyd, Pa., U.S.A. WIKT continues as QSL Manager.

A. E. Wesley Street, VE1EK, of 13 Crescent Ave., Armadale, Halifax, Canada, writes, "Have QSL'd a number of you who have not QSL'd me. Would be most appreciated in these instances. Would appreciate your assistance in obtaining these confirmations for me. 1946: VKWKR 1847 VK2 2ALK, JMTV 5RV, 1948: VK3S SYL 2VJ 3EG 2VJ 3AW 3UC 4AF, 4PZ 4VZ 4VY 4VZ 4VY 1949: 1V3V, 1V3V, 1951: VK3 2PU, 2QL. What about it chaps?"

The Association Radio Excurionists (ARE) celebrated its 25th anniversary on 18th July. As part of the anniversary celebrations the club sent an expedition on 14th July to the exact position of the Poldark Mine. Some radio rigs were set up for transmissions on the following bands: 8, 10, 15, 20, 40 and 80 m. Operating commenced at 1700 GMT on 14th July and continues until 2300 GMT on 15th July. Special QSL cards with interesting information about the expedition and the location will be sent to all Amateurs who contacted the expedition.

Amateurs in Sydney, Melbourne and Adelaide were pleased to meet Yarldine Beers, WEANW, of the University, Yarldine, and a student of Physics, is touring on a Fullbright scholarship specialist in microwave research. He is returning to the U.S.A. after visiting Europe.

Amateurs just seen the eighth wonder of the world! It is a letter from Pat VK4VP, which he naively admits is the first he has written me in the 25 years of our acquaintance. With this historic document came three cards from OYTMEL which Patto kindly forwarded. They were addressed to me, and I am sure to be private QSL Manager, VK4 and ZL only, for OYTMEL whom he frequently QYTMEL on daily from 0700-0800 looking for VK/ZL on either 14050 or 14050 kHz. He requests replies. Roy, I am sure, claims that Patto has the best OYTMEL card collection in 1956, followed by VK4FJ, ZK2, ZKU and ZOK (What, no ZFH, ZCX or ZK8)? The syndicate's organisation has broken down some place! Stations working OYTMEL are to send their cards direct to OYTMEL who guarantees a return card on the card-for-card basis.

A large number of cards have been sighted in the past three months, bearing incomplete particulars of QSO, date and time, having been omitted. These, of course, are useless to the recipients for the purpose of claiming awards.

Odd cards from Danny Wall, of Yassine, fame, from various places, are commencing to arrive from Dick Speight, KVA, who is handling them. QSLs of the operation. Danny expects to receive from Nauru under the call sign VK9TW about mid July, but period of stay at this location is not known at time of writing.

Lt Col Lloyd D. Calvin, DL4ZC, of the U.S. Army Signals, writing from Heidelberg, Germany, states he will be in the U.S. in October returning stateside before the end of 1956 and will be closing down DL4ZC shortly. Lloyd is probably one of the most travelled of Amateurs having held a total of 18 call signs in five different countries—W, FA, KLT, JA and DL.

As of 18th May, the new address for the A.R.E. W3 QSL Bureau is Box 381, Grapevine, Texas. District QSL Manager is R. J. Stark, W5OLG/W5IPN.

Dr Fred Westerweerd, WSMY (ex-KASAA) states that he is glad to be back home again. Any VK missing any of his QSLs can obtain same by writing to him at Army and Navy Hospital, Hot Springs, Ark., U.S.A. He is commanding officer of the hospital.

## FEDERAL AWARDS

W.A.V.C.A. CERTIFICATE

Further certificates have been issued to ZL1AJU, VK2RJ, W6DLY and G5FJK since the last report. Total certificates issued to date—32.

Gordon Waynion, VK3XU, Manager.

## NEW SOUTH WALES

There was a fair attendance at the June meeting of the New South Wales Division to hear a lecture by Mr George Gold of the Civil Defence Organisation. Mr Gold, who departs for Major General Donnelly, detailed a most interesting lecture on the subject of the effects of a nuclear explosion and the measures we can all adopt for our own protection and self-preservation. All present had some food for thought in the very realistic picture which our lecturer painted of just what would happen to Sydney if a nuclear bomb were used against our city. Mr Gold's lecture was much appreciated and members will be pleased to hear that he has promised another, complete with film, of some of the results of the tests at the Nevada proving grounds.

City, suburban and rural country Amateurs are reminded that the monthly meeting of the Division is held at Science House, Gloucester Street, Sydney, on the FOURTH Friday of each month, the next being on 28th August. Attorneys at law, engineers and others have been very disappointing to us when we remember that we have five hundred members around the city. Why not try to be at the next one?

### HUNTER BRANCH

The June meeting of the Hunter Branch was held at the University of Technology, Newcastle, on Friday, 5th June. The President, Bill Hall, 2X2T, welcomed Kevin Burdon and Harry Connors, two new associates, to the Branch. A 144 Mc converter was built by Doug SADIS on a design by the Branch members and is intended for constructing a similar one. Harold SABA gave a description and demonstration of his portable gear for operation on 80, 40 and 20 m. Duncan EMC gave a lecture on "Radio Communication in a Coal Mine". Judging from the number of questions put to him on display to illustrate his lecture, some fair were held that the coal mine had been put out of commission, but the meeting was assured that Duncan had not entirely stripped the mine of electronic equipment.

Two open orders for 22/5/- each were received from local firms to be used as prizes at the Hunter Branch Convention on 30th and 31st September. The hidden ex hunt at this Convention will be carried out at price of 22/5/- and the blindfold ex hunt will be arranged for visitors wishing to attend this Convention. Please notify Hunter Branch Social Committee at least 20 days prior to the Convention date—the first 20 applicants will receive free accommodation.

During the month of June our friend Chris 2PZ was elected chairman of the Newcastle Division of the Institution of Radio Engineers, also during the month Len 2AOR and XYL attended the VK1 Palm Beach Convention to represent the Hunter Branch. Bill 2X2T also planned to be present, but due to urgent business was unable to make the trip at the last moment.

Two of our associates deserve honourable mention, namely Bob Bailey and Ray James. Bob and Ray have done yeoman service for the Branch in their voluntary work, especially field days and parties. Their latest service was a journey to Sydney by truck to bring back disposal gear for Branch members. So thanks, Bob and Ray, from the "boys".

Bill 2ZL has been very active on 40 m and has been of great assistance in coaxial feeders to his antenna to try to cut down some of the noise at his location. Ron 2AJZ reports receiving a VE card after four years laps and also has a card from KB1BWW confirming Ron's e.w. contact using his formerly held key. Harold SABA has returned to ZL4 to get hunting again; Associates Jack Hamilton and Svd Daniels acting as second ops for Ron 2AJZ.

The next meeting of the Hunter Branch will be held at usual location on Friday, 10th Aug.

### UPPER HUNTER GROUP

Activity in this area is at a fairly low ebb at present as most chaps appear to be pre-occupied in their individual pursuits in life. Geoff ZUU had been occasionally on 80 and 40 m and has now upset his 80 m gear and lost the 40 m antenna. The local Rotarians, Geoff, I see that QV9640 coming into use. Tas 2AOV putting in a good signal, mostly operates during the lunch hour and making good progress with the 2 m mix gear. Tas was up near the Hunter River and the Hunter will be able to furnish the emergency net with valuable data if the need arises. Perchance the recent widespread rain had most of us checking our emergency gear.

No news on Roy ZHC, let's hear from your someone for a QSO by mail, but not too much at the time of writing these notes. In touch with Wm 2OS who informed me that he had not given up his interest in Amateurs

Radio, but has been tied up with a concrete mixer in his spare time so there much to be done around the house. Has a mix coming forward so it looks like more new blood for the v.h.f. bands, f.b.

Your scrib's took a flying visit to Singleton to inspect ZVU's paint job—very f.b., Geoff. Main interest was the paint job, getting down and re-erecting a much-battered concrete tower negotiating for an old windmill tower. A good way to keep warm this weather is to take on splitting posts, hi.

### NORTH COAST AND TABLELANDS

Bernie 2ZM (ex-ZUH) is in Kempsey installing fm. gear for the V.M.G. newspaper in Kempsey. George ZYT at the local broadcast station ZKMK. George is not active so far. We now have a v.h.f. representative at Macksville, a welcome addition to Z. E. Hughes with a brand new "2T". A local Amateurellie will be a great help to the coast relay network. Peter 2PA and Ted 2AVG are working on a Zircon Rustle plant at Southport and, by all accounts, enjoying life up there. 2AVH very busy and wishes he could be in two places at once, but still found time to snag YVVA on 80 m!

### COALFIELDS AND LAKES

Very little heard from Gosford apart from SRU who is regularly on 7, 88 and 144 Mc. ZL2 is getting ready for 144 Mc. Doug 2ASA has been active on 144 Mc. and also is regularly on 144 Mc. with a 8 over 16 Mc. and also is keeping Kurri Kurri on the map; thinking of bringing gear back to house; giving back yard shock away. ZMC not active 142 v.h.f. erects 2 m. antenna; it will be 100 ft. high, so Amateur gear getting spiffy. No news of ZANU or SYU. SYL has new over 144 Mc., much improved results, with ZANG the best contact yet.

### TAMWORTH

Noel 2ASQ has built a converter, pre-selector for his rx for 10 and 15 m, and reports very good results. He is also in the throes of building a quad for 15 m for the coming months in order to convert his ground plane beam against it on DK contacts. Tamworth has acquired another Amateur, one Bruce 2ZAD, late of Chester Hill, and Bruce has been given permission to 144 Mc. He has a converter and is in the process of completing a tx, tells me he already has gear operating on 288 Mc. Sam ZBL, that was not yet received his new call from the Department, but is active, is going to be 288 Mc. SABP has not been heard from lately, pre-selector getting tamer with the v.h.f. band. What say, Syd?

It is nearly time the old warhorse, War-rambo, cut a signal on the air, namely, Bob 2AQR we have to keep looking at the clock in the morning to make sure we are not late for work now, that we cannot listen to his hobby's repetition at breakfast time. Frank 2APY is in the process of building the 144 Mc gear for the unimpeded time, and is also building a three-band beam for 20, 15 and 10 m which is alleged to perform as well as the quad antenna.

Bernie 2AAT visited the town of Eden on holidays and visited VK3Aways-Surrounded-by-Fish. Word has been received from Steve, ex-2AAS, who is now 48K. Steve is having himself a good time at Mackay together with Don, ex-ZTU, hauling out some good 30 to 40 pound cod (this will make 2AAT envious) while he works (?) at the local b.c. to there.

### SOUTH WESTERN ZONE

The main activity in this zone has been an effort to get 2 m equipment under way at ZL4. Roy ZHC, with the help of Geoff, has started for Adrian 2HFT with Geoff lecturing and lecture to the Griffith Radio Club on "How to get going on 3 m x". This was followed the next day by a demonstration of equipment and an effort to work out of Griffith on 3 m. Contact was made with Sam ZL2 Cooloolas, WPH, Forbes, 2ZB, Albury, 2ALU, Condobolin, 2ZAT Birchip. The week-end was particularly educational and enjoyable.

A new member to the ranks of Amateur Radio is John Mackie, from Elliston, who is awaiting his call sign. John spent the weekend in Griffith with Geoff, lecturing and demonstrating and he was able to gain a lot of useful information. John has since acquired gear and should be operating 1 m mix in the near future. Others who should be heard soon are Geoff 2AAT, Brian 2AVI and John 2ECA. The Geelong have gear for 1 m band and are no doubt trying for the 2C977 valve which Ross JPN has offered to the first Griffith chap to work two ways from Griffith on 1 m x gear.

Don 2EJ is active as usual on all bands and is building a xtal-locked converter for the Griffith Radio Club. Herb 2QD and Artie 2EU



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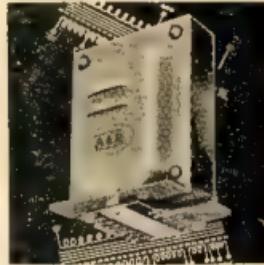
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"	1766	125	" "	"	1779	" "	"	385-C.T.-385
"	1767	" "	" 285-C.T.-285	"	1780	200	"	350-C.T.-350
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"	1770	" "	" 350-C.T.-350					
"	1771	150	" 385-C.T.-385					
"	1772	" "	" 285-C.T.-285					
"	1773	" "	" 325-C.T.-325					
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August from their Hobbies Exhibition. Answer their calls chaps, it's a great help to such functions and a big aid to promote interest in an exhibit like that if the contacts pile up. So do your duty to help spread publicity of our show.

Bob SRI busy re-building converters (better be careful here, this is v.h.f. stuff), all the same his other gear, all working well and getting standard up ready for R.D. Contest. Lance SXL has an atom-bomb-proof shack, dug into a hillside; complaints of the cold these days. Can't have it all ways Lance, we are all a bit gossipy these days, anyway nice to see you all up there. Notice recent that a lot of the boys are getting rather scientific and quite thermometer and barometer readings these days. Who, soon they will be quoting input power to final or even radio active counts! Who will be the first to do the same?

The Wooluma boys at S7G now there is a gang for you—bop up regularly complete with rhombics, vee beams and verticals, with a 5 by plus signal. But Ron and company, who always seem to be there, are still round the mike to the mike base? If you want to file off the DD from the name-plate, do so when listening. George SEC has had his XYL down with a plaster on an ankle, bed rest that, hope all will soon be well again.

Now comes the news that S7G is the first in this State to gain a t.v. license, congrats O.M. Best of luck to you in the new sphere, we will be looking for you. By the way, he had an interview with a local publication who wrote him up well and he got front page publicity, but who would have expected me to see that in the background of the block there was a W card displayed. Alas it's the only way I ever see such things.

Understand Joe SMO has received confirmation of his W.A.C. Contracts Joe, D.X.C.C. coming up. Sorry no South East news this month, but we hope to be better organised next time and will make up the lee-way then. Your new scribe will be appearing in one or two from the outer lands soon circle around your activities for compiling these notes. We want to keep them of general interest and representative of the whole Division. Rest assured your "mail" will be read for news but that won't cover the whole field due to the vastness of the QTH.

Good QTH and finally a word for QST (not stout type) and sometimes Doc SMD did this job. They were amongst most of you. I am further away and a great number of you don't know me yet, but you will—S.E.F.

## WESTERN AUSTRALIA

The June meeting of the Division, which was well attended, took the form of a visit to the South Guildford Club, where members were welcomed by Mr. Harry Bush, of D.C.A., and spent a very enjoyable and instructive evening.

Country members, particularly, appreciate the good job Mr. Bush did in making arrangements for the South meeting. Translating simultaneously on 80, and 40 mx, he presents the news in such a way that the more isolated members are kept well in touch with Divisional affairs and activities. Keep up the good work, W.A.D.

SMK is making a flying (air) visit to England this month. SLM has set himself up with gear to listen on 144 Mc. and has been working some of the v.h.f. boys. I wonder what they think about my boys? SMO was recently using a temporary aerial, having once more lost his beam in a high wind. Says he "all who suffered some serial damage were QFD and QFD". The latter, who is now SMO, is active on all bands. Says he likes 15 mx and is now interested in cubical quads. SFR is building a portable rig for 40 mx, also modifying his 3 mx converter.

SMK now firmly settled in his new QTH in the hills east of Perth, has 50 phones with him and an EL34 (AB1) modulator. SMO has just completed a 20 mx shortened beam. GJH has been heard on 40 mx phone and c.w. SAG was recently heard calling CQ and testing at 8000 hours on 80 mx. GJH's first favour to DX, was also on 40 mx. GJH just getting settled in new QTH, quite close to but 100 ft. above the previous one! SDX was recently seen in Perth. SWZ now settled in Albany and on the air again. STH has just returned from a visit East. How you had a good time! GJR is regularly heard on Sunday mornings. GJR pops up occasionally on 80 and 40 mx. SCN expects to be active soon, now a.c. mains have been restored. SMO has been heard from his new QTH at Ingleswood.

Local activity seems to be improving, your scribe having worked 53 VK6s on the 14 bands

over the past 12 months, and many more are known to be active.

**R.D. Contest, 11-13th August.** Preparations are already under way in many shacks, and stations, and contacts, are appearing. Remember the date and have the gear ready. It looks as if this year's Contest will be a good one. I would not like to predict the result, for fear of discouraging the boys over East. Anyway, may the best Division win!

The 40 Metre Scramble has been fixed for 23rd September. This local contest was much enjoyed by all participants last year and is good fun.

A suggestion has been made that a monitoring group be formed to log commercial QRM on the Amateur bands and volunteers are asked for. Short wave listeners with suitable monitoring equipment can help.

Finally, don't forget to complete and post the Questionnaire and let your scribe have "copy" in good time to mail so it reaches H/Q by the eighth of the month—S.E.F.

## PAPUA—NEW GUINEA

Alf SAB has now left the Territory for ZZ and will be looking for QSOs from his old operating ground. Another to leave is Edwin SVP who will be located in Melbourne. The only gain that I know of is a new country added to VK9 on Nauru Island. This information comes from KV4AA, who is QSL manager for Danny on a world cruise and at present at W1R in the United States. If you would like a prompt QSL for one of his choice postcards, it will set you back one dollar which goes towards the financing of the DXpedition. Otherwise your card goes by the Bureau and Doc says it can take up to two years before he gets them all away.

Harry PHO is now returned from leave and at present located at Lom. He is re-building a nice outfit and should make his presence felt just as soon as he knows what his permanent position will be. He found time to call at the shack of SBR recently, along with his XYL and harmonics, and all the usual interesting ground was duly covered. Les SHI has now shifted QSL to a more suitable location for an amateur farm and includes putting up some fancy arrays. SWI RIG is progressing each week and we now need a modulation transformer to put out 250 watts of studio, if anyone can assist with a contribution, I have been informed that the A.J.R. Radio Club is the best place to start with. Bill SBW in the chair and BBS the first Secretary. We look forward to them joining the Sunday morning hook-ups with the rest of the gang. W.A.E. has now been earned by SBS and is finding time to work hard to draw with both needing a couple of QSLs to clinch the deal, so it will be interesting to see who collects the first post-war W.A.S. award for VK5. Watch on the many radio awards. AJAIA and the J.A.R.C. Manager informs me that the A.J.D. Award can now be obtained from W.I.A. with the necessary verifications instead of sending direct. Incidentally, I received one recently and they are quite an attractive piece of document, if anyone is thinking of chasing it.

For the time being, I would like to wish your present interim sub-editor on his way south, complete with rig to be set up in VK5, so this is going to be my swan song. I have enjoyed very much my association with all the Amateurs in the Territory over the past two years and it is with regret that I have to relinquish the close contact with you all, but look forward to meeting you all over the air at some later date. I can note a big increase of Amateurs in the last year, and a marked half a dozen when there was my Division here and no QSL Bureau, with every man for himself, so you will see things are really progressing in the fraternity.

I take this opportunity of wishing you all success and a continued rate of progress within the Amateur ranks in the years to follow, and anything I have been able to do to further our aims has always been a pleasure—S.R.M.

## CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

### THE R.D. CONTEST

Editor "A.R." Dear Sir,

I am against reducing operating time to this contest. This would be incorrect. Would it be any "R-Day Contest"? To combat some operating dissatisfaction expressed, may I suggest (1) Operation on 80, 40 and 30 mx bands

only; (2) Contacts to be either 100% c.w. or phone; (3) In the quiet early hours allow intra-state contacts on all bands—1 point per contact; hours to be fixed for each State, but Interstate contacts to be limited to 100% of the time. (4) Raise the points permissible for log eligibility.

Having spent 13 years (out of 36 years since first licensed) in the country with no a.c. or d.c. power available, my suggestions would bring more country Amateurs into the Contest.

—ARCH J. HEWITT, VK3KK.

### JOHN FLYNN MEMORIAL CHURCH

Editor "A.R." Dear Sir,

Further to the references to the John Flynn Memorial Church contained in the June issue, I thought it might be of interest to bring to notice that the "Memorial Wall" is a tablet mounted on the following wall in the church. In addition to those referred to in the article—

D. G. Wylie, G. Towns, E. N. Gollan, H. Klinbrunner, M. B. Anderson, and V. L. Kerr (the three lastnames are VK4KA, VK3KA and VK4KAL respectively), "whose courage and technical skill enabled Flynn to realize his dream of effective communication in the outback."

It is established beyond doubt that the Træger transceiver, as used extensively in "the centre", has materially assisted in the settlement of the more isolated parts of the country by making it possible for the Amateurs to live on amateur proportions and still feel that they are not beyond aid should such ever become necessary.

—T. LAIDLOR, VK3TL.

[Further information on this subject has come to hand and we hope to publish an article covering the early days of the Flying Doctor Service in the near future. If you can supply any information on this subject please forward same to this journal.—Editor.]

## HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Displays advertisements not accepted in this column.

**FOR SALE:** Transmitter c.c. 5 band, 60W, p.p. 807s, 5 ft. R & P mounting. Mod. AB2 KT66 c.w./p.w. supplies, relay controlled, 18 tubes, reliable, £35. V.F.O., shielded, Clapp osc, temp. comp. S6N-807 3w output 3.5 Mc, calibrated 5 bands, bandspread, n.b.f.m. 6L7 Mod., 2 S/amps, reg. power suply, £10. ASB7 575 Mc. Receiver unmodified c/w. GL446 lighthouse and other tubes (9), £6. 3 watt p.p. w/speaker and 75 r.p.m. t.t. and p.u. Garrard, £2. 10 watt p.a. valve mike, 2 ext. speakers in carrying case, £15. 1143 v.h.f. Tx-Rx, Rx mod. for 50 Mc. £8. Test Set 5A, mod. and cal. 100-150 Mc. c.w. v.t.v.meter, leads, and a.c. power supply, for alignment of 522 and 1143 v.h.f. sets. Inspection, reasonable offers considered, night or weekends. E. Manifold, 267 Jasper Road, McKinnon, Vic.

**FOR SALE:** V.h.f. Field Strength Meter, calibrated range 100-160 Mc, fitted with 1/2 Ma. meter and telescopic antenna, c.w. tube and batteries in a steel case, price £8. L. A. Paul, 340 Rathmines St., Fairfield, Vic. JJ 1823.

**FOR SALE:** Xtls, many freqs, mostly FT243 holders. All £1 ea. Write for list. T. R. Naughton, Box 80, Birchville, Vic.

**WANTED:** Bendix BC221 Freq. Meter, ABW1 Wavemeter. D. MacMillan, 28 Vernon St., Cessnock, N.S.W.

**WANTED:** Urgently: "QST," April '49. Good Price. R. Neal, 11 Xavier Street, North Essendon, Vic. FY 9380.



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BARGAIN

CENTRE \*

## Buy Your Test Equipment on Homecrafts' Easy Terms

### HEAVY DUTY RHEOSTATS

200 ohms  
9/11 each

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suitable for  
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### Q PLUS COIL FORMERS

5/16 or 9/16 inch dia. iron cored.  
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300 ohm type  
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### CO-AXIAL CABLE

72 ohm, 1/048 semi-air spaced  
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### SPECIAL!

#### PEERLESS SPEAKERS

10 inch Twin Cone  
6 watts, 50-15000 cycles per sec.  
95/- each plus tax

### CABINETS OF DRAWERS

12 large type Drawers, 9 x 4 x 3  
inch ..... 79/6 plus tax  
12 Medium type Drawers, 7½ x 3  
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16 Small type Drawers, 5½ x 2½  
x 1½ inch ..... 36/8 plus tax

NO MAIL ORDERS. PERSONAL SHOPPERS ONLY.

### POCKET SIZE MULTIMETERS

English make, 1800 ohms per volt  
£9/19/6 each

### 0-20 VOLT D.C. METERS

2 inch square, 5 Ma. movement  
10/- each plus tax

### Rack Mounting Type AMPLIFIER CHASSIS

Overall size: 19 x 10 x 7½ inch  
10/- each

### TRANSMITTING TUBES

327 ..... 15/- each  
RX21 Mercury Vapour Rec-  
tifiers ..... 15/- each

### Full Track TAPE ERASE HEADS

Brand new in boxes  
39/6 each

### RESISTOR OR CONDENSER SUBSTITUTION BOXES

Metal box complete with en-  
graved panel, ready for building  
up into useful instrument.  
Requires the addition only of  
switches and condensers or  
resistors.

10/- each

### Brand New

7 INCH PER. MAG. SPEAKERS  
Well known make, boxed.  
27/6 each plus tax

### WIRE WOUND RESISTORS

Good assortment.  
Approx. 24 in bag.  
10/- bag

### LECTROFLASH CAPACITORS

650 uF. 250v.  
42/9 each

### BARGAINS! BARGAINS!

### GANG CONDENSERS

Large variety, 2 or 3 gang.  
8/11 each

### POWER TRANSFORMERS

various types  
10/- each

### WIRE WOUND

### POTENTIOMETERS

1000, 2500 and 10,000 ohms  
3/11 each

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one megohm  
4/11 each

### PUSH BACK HOOK-UP WIRE

10 yards for 2/-

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27 s.w.g., 2 oz. coil, 2/- plus tax  
22 s.w.g., 4 oz. coil, 3/9 plus tax  
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290 LONSDALE STREET, MELBOURNE

FB 3711

# TV

## for the Amateur

Plugs & Sockets for TV Aerial Terminations by  
**BELLING AND LEE**

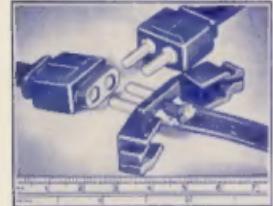
### Plugs and Sockets for Twin Feeder



L733/P—Free plug for twin feeder.

L733/S—Fixed socket.

These inexpensive plugs and sockets were designed for use with unshielded balanced twin feeder as employed in television and short wave installations. Accepts 80 or 150 ohm feeders. L733/J—Free socket. This is similar to L733/P, but is fitted with socket inserts as in L677/J.



L733/J—Free socket.

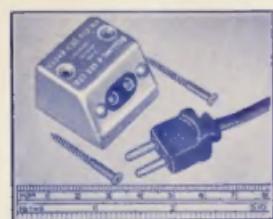
L677/P—Free plug for twin ribbon feeder.

L677/S—Free socket.

Designed for use with 300 ohm unshielded twin ribbon feeder as used for short wave work and television. Conductors are pinched in the splits of the solder pins and the "butterfly" type moulding holds over the feeder.

Special slits grip the cover over the cable conductors.

Interchangeable with L733/P and S, and L738.



L738—Outlet socket box for 80 or 150 ohm feeder.

A skirting board termination for unshielded balanced twin aerial feeders. L738 is fitted with the outlet socket which will take L733/P or L677/P.

Australian Factory Representatives:

R. H. CUNNINGHAM PTY. LTD., 118 Wattletree Road, Armadale, Vic.

### Co-axial Outlet Sockets



L133—Outlet socket box.

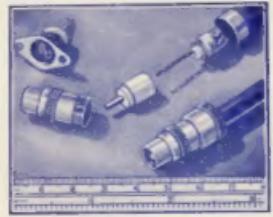
An improved surface mounting outlet box designed primarily for neat termination at the skirting board of television aerial installations. Will accommodate feeders up to 8/16 in. diam. The appropriate range of plugs is listed under L1328, L734/P and L781.

This box is also suitable for certain laboratory and test bench installations.



L763—Double outlet box.

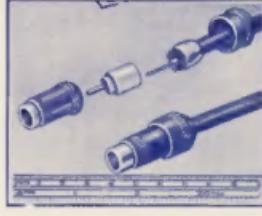
This box has two standard outlet sockets and is complete with a "star" matching network which provides the coupling between the incoming cable and the outlets. When two receivers are connected the input to the box is divided on the input to the box. Designed for use in demonstration rooms, workshops and laboratories, etc., or where neighbours in semi-detached or terraced houses wish to share a television aerial installation. The appropriate range of plugs is listed under L1328, L734/P and L781.



L734/P and L1329—Standard free plugs.

L734/S—Fixed socket.

### Co-axial Outlet Sockets



L781/P—Free plug, insulated.



L734/S—Free socket.

Belling and Lee range of plugs L734/P, L781/P and L1329 conform to the draft R.E.C.M.F. Specification for television inlets. In addition to these requirements they are also designed to meet the requirements of the British Standard for rectal loading. In L734/P and L781/P the pin is retained in the insulation. L1329 has a hinged moulding to enable the pin to be withdrawn for soldering and/or crimping.

Complementary sockets for above range of plugs are L734/S, L804/S (fixed) and L734/J (free).



L618—Adaptor.

L618/S—Fixed socket.

A particularly useful application is for the aerial input circuit in radio installations. The co-axial cable designed expressly for this purpose loads perfectly into this lug. The sockets are suitably designed to hold the plug against vibration and are cadmium plated.

The fixed socket L618/S is the complementary mating member to our co-axial plugs. A flush mounting type, L734/S, is also available.